# THE REPORT

OF THE

## PRESIDENT

OF

# QUEEN'S COLLEGE, BELFAST,

FOR

### THE YEAR ENDING 31st JULY, 1871.

*Presented to both Houses of Parliament by Command of Her Majesty.*

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FOR

## THE SESSION ENDING 31st JULY, 1871.

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## TO THE QUEEN'S MOST EXCELLENT MAJESTY.

MAY IT PLEASE YOUR MAJESTY,—

I have the honour of presenting to your Majesty my Report regarding the condition of Queen's College, Belfast, for the twelve months ending the 31st of July, 1871, embracing the three Terms which constitute the Session. It affords me renewed satisfaction to be enabled to record the steady progress of the College in fulfilling the important objects contemplated by its founders and by the friends of sound and liberal education. During the year embraced in this Report 380 students attended their full courses of lectures here, in the various departments of Arts, Medicine, Engineering, and Law, of whom 337 were matriculated and 43 non-matriculated. The subjoined table, which brings out the number of students attending the courses of lectures in each session since its opening, presents results gratifying as to the past, and encouraging as to the future. In the first year of the College's opening 195 men appeared on the rolls of the College—90 matriculated and 105 non-matriculated, the latter number being largely made up of students from the old Academical Institution of Belfast, who attended various classes in Queen's College, in order to complete the courses on which they had previously entered, many of them having delayed doing so for some years, waiting for the opening of the College. The remarkable change which in a few years took place in the great increase of students on the rolls, reversing entirely the ratio of matriculated and non-matriculated students, has quite fulfilled the anticipations which I and my brother Presidents had formed of the necessity of a University to consolidate and combine the interests of the Queen's Colleges in Ireland. The statutes of these Colleges had imparted to them unity of action, of system, and development, immensely superior to more affiliation; so that the organization of the Queen's University produced an immediate and similar effect upon them all, in increasing a desire amongst students to prepare for the

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testing and extensive matriculation examination, then to prosecute the various defined courses for graduation, and thus to prepare for their selected professions and pursuits. The University, as enabled by its Charter, adapted itself earnestly and faithfully to the enlarged and comprehensive courses of the Colleges as they are to the moral and intellectual demands of the age and of the country; and consequently I am now enabled to report to your Majesty a very large increase in the numbers attending the College since its opening, but particularly on the important side of matriculation, in order to qualify for obtaining standing and promotion in the Queen's University in Ireland.

The four following tables will be found both satisfactory and comprehensive.

In making the Denominational Returns I have thought it right to classify the students of the various Churches as they have generally designated themselves in the forms filled up by them at entrance.

I.—NUMBERS and RELIGIOUS PERSUASIONS of STUDENTS attending Lectures in QUEEN'S COLLEGE, BELFAST, in each Session from its opening.

| Sessions. | Matriculated. | Non-Matriculated. | Total. | Church of Ireland. | Roman Catholic. | Presbyterian. | Methodist. | Independent. | Various. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1849–50, | 90 | 105 | 195 | 33 | 5 | 145 | 4 | 1 | 7 | 195 |
| 1850–51, | 110 | 75 | 185 | 23 | 10 | 128 | 4 | 1 | 19 | 185 |
| 1851–52, | 120 | 69 | 189 | 40 | 14 | 129 | 5 | — | 1 | 189 |
| 1852–53, | 101 | 53 | 154 | 33 | 15 | 100 | 4 | — | 2 | 154 |
| 1853–54, | 114 | 54 | 168 | 36 | 14 | 107 | 6 | — | 5 | 168 |
| 1854–55, | 118 | 65 | 183 | 31 | 14 | 131 | 3 | — | 1 | 183 |
| 1855–56, | 119 | 74 | 193 | 33 | 10 | 141 | 5 | 2 | 3 | 193 |
| 1856–57, | 136 | 58 | 194 | 38 | 14 | 131 | 3 | 2 | 9 | 194 |
| 1857–58, | 163 | 54 | 207 | 31 | 14 | 154 | 4 | 1 | 3 | 207 |
| 1858–59, | 160 | 63 | 223 | 45 | 14 | 153 | 8 | 2 | 1 | 223 |
| Average of first 10 years, | 122·1 | 67 | 189·1 | 35·3 | 13·3 | 131·7 | 4·6 | ·9 | 3·3 | 189·1 |
| 1859–60, | 159 | 58 | 217 | 43 | 16 | 184 | 8 | 2 | 4 | 257 |
| 1860–61, | 239 | 73 | 312 | 57 | 23 | 216 | 7 | — | 16 | 312 |
| 1861–62, | 298 | 79 | 375 | 59 | 17 | 266 | 13 | 4 | 16 | 375 |
| 1862–63, | 335 | 53 | 388 | 61 | 24 | 275 | 11 | 3 | 14 | 388 |
| 1863–64, | 340 | 47 | 387 | 63 | 26 | 261 | 10 | 3 | 24 | 387 |
| 1864–65, | 356 | 49 | 405 | 56 | 22 | 295 | 3 | 3 | 30 | 405 |
| 1865–66, | 360 | 53 | 413 | 60 | 19 | 281 | 13 | 2 | 38 | 413 |
| 1866–67, | 357 | 30 | 387 | 57 | 19 | 252 | 15 | 11 | 67 | 387 |
| 1867–68, | 357 | 33 | 390 | 59 | 16 | 233 | 25 | 2 | 55 | 390 |
| 1868–69, | 330 | 38 | 368 | 51 | 15 | 220 | 26 | 2 | 54 | 368 |
| Average of second 10 years, | 317·2 | 51 | 368·2 | 56·8 | 19·6 | 244·6 | 14·0 | 2·0 | 31·2 | 368·2 |
| 1869–70, | 328 | 25 | 353 | 57 | 18 | 214 | 19 | 3 | 42 | 353 |
| 1870–71, | 337 | 43 | 380 | 76 | 14 | 226 | 22 | 4 | 38 | 380 |

[TABLE.

II.—NUMBERS and RELIGIOUS PERSUASIONS of Students who have entered QUEEN'S COLLEGE, BELFAST, in each year since its opening.

| Sessions. | Matriculated. | Non-Matriculated. | Total. | Church of Ireland. | Roman Catholics. | Presbyterian. | Methodist. | Independent. | Various. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1849–50, | 90 | 105 | 195 | 33 | 5 | 145 | 4 | 1 | 7 | 195 |
| 1850–51, | 51 | 42 | 93 | 15 | 7 | 68 | 1 | | 2 | 93 |
| 1851–52, | 42 | 40 | 82 | 25 | 7 | 47 | 2 | 1 | | 82 |
| 1852–53, | 31 | 23 | 54 | 16 | 7 | 28 | 2 | | 1 | 54 |
| 1853–54, | 39 | 23 | 62 | 14 | 2 | 36 | 3 | | 4 | 62 |
| 1854–55, | 41 | 38 | 79 | 13 | 6 | 56 | 2 | | 2 | 79 |
| 1855–56, | 33 | 29 | 62 | 17 | 5 | 36 | 2 | 2 | | 62 |
| 1856–57, | 40 | 28 | 68 | 18 | 4 | 40 | 1 | | 5 | 68 |
| 1857–58, | 43 | 28 | 71 | 8 | 4 | 55 | 2 | | | 71 |
| 1858–59, | 51 | 37 | 88 | 24 | 8 | 51 | 4 | 1 | | 88 |
| Entered first 10 years, | 461 | 393 | 854 | 183 | 60 | 562 | 23 | 4 | 22 | 854 |
| 1859–60, | 66 | 24 | 90 | 14 | 6 | 64 | 4 | | 2 | 90 |
| 1860–61, | 96 | 41 | 137 | 29 | 12 | 85 | 3 | | 7 | 137 |
| 1861–62, | 114 | 38 | 152 | 27 | 6 | 101 | 6 | 3 | 10 | 152 |
| 1862–63, | 113 | 29 | 137 | 23 | 8 | 89 | 19 | 2 | 5 | 137 |
| 1863–64, | 109 | 18 | 127 | 25 | 3 | 86 | 3 | | 7 | 127 |
| 1864–65, | 108 | 27 | 135 | 20 | 7 | 88 | 5 | | 6 | 135 |
| 1865–66, | 98 | 30 | 116 | 17 | 7 | 83 | 5 | | 4 | 116 |
| 1866–67, | 95 | 12 | 107 | 16 | 6 | 61 | 19 | | 14 | 107 |
| 1867–68, | 90 | 22 | 112 | 20 | 5 | 63 | 1 | 1 | 22 | 112 |
| 1868–69, | 79 | 24 | 103 | 16 | 7 | 60 | 5 | 2 | 12 | 103 |
| Entered in second 10 years, | 960 | 258 | 1,218 | 207 | 72 | 792 | 48 | 7 | 92 | 1,218 |
| Total in 20 years, | 1,421 | 651 | 2,072 | 392 | 132 | 1354 | 69 | 11 | 114 | 2,072 |
| 1869–70, | 83 | 15 | 98 | 23 | 8 | 54 | 1 | | 9 | 98 |
| 1870–71, | 84 | 30 | 114 | 36 | 2 | 57 | 8 | 1 | 10 | 114 |
| | 1,588 | 696 | 2,284 | 451 | 142 | 1,465 | 81 | 13 | 132 | 2,284 |

III.—RETURN of the Number of Medical Students in attendance in each Session.

| Session. | Matriculated. | Non-matriculated. | Total. | Session. | Matriculated. | Non-matriculated. | Total. |
|---|---|---|---|---|---|---|---|
| 1849–50, | 28 | 27 | 55 | 1860–61, | 70 | 46 | 116 |
| 1850–51, | 20 | 35 | 55 | 1861–62, | 91 | 38 | 129 |
| 1851–52, | 25 | 39 | 64 | 1862–63, | 89 | 33 | 122 |
| 1852–53, | 29 | 33 | 62 | 1863–64, | 110 | 33 | 143 |
| 1853–54, | 29 | 37 | 66 | 1864–65, | 126 | 25 | 151 |
| 1854–55, | 39 | 36 | 75 | 1865–66, | 130 | 29 | 159 |
| 1855–56, | 33 | 48 | 81 | 1866–67, | 157 | 17 | 174 |
| 1856–57, | 36 | 35 | 71 | 1867–68, | 163 | 18 | 181 |
| 1857–58, | 33 | 32 | 67 | 1868–69, | 150 | 24 | 174 |
| 1858–59, | 45 | 34 | 79 | 1869–70, | 145 | 22 | 167 |
| 1859–60, | 56 | 30 | 86 | 1870–71, | 168 | 26 | 184 |

* Of the 696 who entered as non-matriculated Students, 133 afterwards passed a matriculation examination. The College Register contains 1,721 matriculated and 563 non-matriculated, in all 2,284 students.

IV.—Return showing the **Number** of **Scholars** attending the Lectures of each Professor in each year since the opening of the College.

Professors:
- Greek
- Latin
- Mathematics
- English
- Modern Languages
- Oriental Languages
- Natural Philosophy
- Natural History
- Chemistry
- Geology, Mineralogy
- Logic
- Engineering, Architecture, &c.
- Anatomy
- Medicine
- Midwifery
- Materia Medica
- Botany
- Jurisprudence

This return is given more fully in detail in the Appendix, pp. 34, 35.

The return of Lectures delivered in each Session appears in pp. 36, 37 of the Appendix.

The following table gives the entrances and attendances relatively of students during the session 1870–71.

Session 1870–71.

| | | | | | | Entered. | Attended. |
|---|---|---|---|---|---|---|---|
| Arts, | . | . | . | . | . | 34 | 120 |
| Engineering, | . | . | . | . | . | 4 | 16 |
| Law, | . | . | . | . | . | 3 | 25 |
| Medicine, | . | . | . | . | . | 63 | 194 |
| Occasional Students, | . | . | | | | 10 | 30 |
| | | | | | | 114 | 385 |
| | | | | | | In two Departments, | 25 |
| Totals, | . | . | . | | | 114 | 360 |

I feel bound to express much gratified at the great success of the medical school in this College. In the year 1849–50 that department contained 55 students—28 matriculated, 27 non-matriculated. Now 184 medical students are in attendance—168 matriculated and 26 non-matriculated. I may here remark that the matriculation examination for medical students is both extensive and *bonâ fide*, laying the foundation of a sound general education, giving afterwards to the student and the practitioner a great superiority over non-matriculated men. The erection on the College grounds of anatomical rooms not inferior to any in the Empire, the existence of the excellent General Hospital of Belfast, opening its important advantages of practice and observation to the students of this College, the admirable instruction given by the medical professors—not less zealous and able than their colleagues in the other departments of the College—all these have contributed to make the medical school of this College one of the most flourishing in these kingdoms.

The annexed return furnished to me by the registrar of the College, presents a statement of some of the appointments won by its students in the competitive examinations instituted by the Civil Service Commissioners and carried out in London, affording irresistible testimony to the excellence of the scientific and literary instruction afforded here, to the unflagging zeal of the distinguished Professors, and of the intellectual power and industry of the students.

The alumni of this College continue yearly to carry, many of them high places, some of them the very highest, in the various departments of the public service, through the system of examination, now permanently established. In a number of instances our men have not only scored the first amongst hundreds of competitors, but have stood far above the second successful men. From the very introduction of this system of thoroughly tentative examinations, this College established for itself a most honourable position, in the intellectual conflicts of its students with those of the oldest universities and colleges of the empire.

It appears from the notes in the Queen's University Calendar

that the following, among many other successful men, have been educated at Queen's College, Belfast.

        10 Members of the Consular Service.
        20 Members of the Civil Service of India.
         5 Engineers of Public Works in India.
         3 Members of the Geological Survey of India.
        33 Members of the Army Medical Service.
        14 Members of the Navy Medical Service.
         2 Secretaries to the Chinese Embassy.
         1 Inspector-General of Customs in China.
         3 Officers Royal Engineers.
        12 Professors of Colleges and Universities.
         4 Assistants to Professors
         5 Head Masters Collegiate and Academical Institutions.
         6 Inspectors of National Schools.
         3 Barrington Lecturers.
         2 Members the Senate Queen's University.
         5 Law Students Inns of Court.

A large number also of eminent Barristers, Physicians, Surgeons, Civil Department in the Army, and Professional Gentlemen now engaged in pursuing useful and lucrative employments, at home and abroad.

There have been furnished to me, under the heading of the "Civil Service of India," the names of the gentlemen selected in 1870, who after two years training in this country, have just now passed their final examination. At the head of this list of 38 previously successful men, stands the name of Mr. Edward Stack, a distinguished Student of this College, as having now scored 663 above the second in order of merit of those selected two years ago out of a most numerous list of competitors, being then and all through far ahead of all ; and he appears to have recently won nine prizes in this final contest, value £380, nearly the half of all the honors awarded. Of the 38 now proceeding to their assigned Provinces of India, the name also of Mr. Hoey, of this College, stands the 10th in this last conflict of the formerly fortunate men.

These recent successes are indicative of the position which this College has yearly held from the first in the examinations for the Public Service. So early as the year 1857, I was enabled, in a public address, to publish the Table to which the following observations explanatory of them were affixed :—

"That the professors charged with the high duty of giving instruction in these branches, have thoroughly fulfilled their trust, facts which have attracted no common notice, afford the most unquestionable testimony. If I may be permitted, I will narrate, in a few words, a conversation which I had with an influential friend, regarding the success of our students at the late examinations for the East India Company's service. He could not well comprehend how an infant college should so soon assert so high a standing against the oldest universities in these kingdoms and appeared to think that there must have existed, in the case, some unusual and accidental circumstances to account for it. I undertook to enlighten him. My reply was, no accident can have produced the succession of triumphs, which I will state to you. It was no accident which, last year, at the Woolwich examination, placed Mr. Miller 1,100 marks above all competitors at entrance, and which has enabled him

again, this year, to hold its pre-eminent position, whilst many others have been depressed in the scale. It could be none, that gave such marked success to shew them, as the still far greater and more extended examinations for these East India prizes—three of the only four from Irish colleges, who stand amongst the successful twelve from all. As little was it accidental, that Mr. Ingram, one of our scholars and law students, carried, at the London Inns of Courts, on remarkably distinguished answering, the three years' most valuable scholarship, thrown open for competition to all the gentlemen studying in those courts; and as little so, that numbers of our medical men have been selected on merit to fill the highest offices within the reach of such; whilst this year, at the Queen's University, no medical candidate of ours for graduation, was rejected; has, on the contrary, each was recommended to the Senate, as qualified, not only to obtain his degree, but to go in for the higher honor examination. I said then, as I repeat this same here, that all these gentlemen, and others who, in various quarters, have done us honour, have had, in common with all their fellow-students, the advantage of sitting under the prelections of professors, who have vindicated the impartial discrimination of the Government in appointing them; whose knowledge and learning fully bring them up to the occasion and the necessity; whose exertions, both for the benefit of the subject and the advancement of the students, are as unabated as they are judicious; and whose labours are, from year to year, rewarded by such natural and satisfactory results. Without this, such marked success would have been impossible.

LIST OF THE SUCCESSFUL CANDIDATES in 1857, the First Year of Public Competition.

| Name. | | Age on the 1st May, 1857. | Place of Education. | Marks. |
|---|---|---|---|---|
| Mr. Beveridge, | . | 20 | Queen's College, Belfast, | 2,427 |
| Mr. Carpenter, | . | 20 | Brighton College, | 2,374 |
| Mr. Mauro, | . | 18 | Edinburgh University, | 2,311 |
| Mr. Barkley, | . | 21 | Queen's College, Belfast, | 2,307 |
| Mr. Wavell, | . | 18 | St. John's College, Cambridge, | 2,207 |
| Mr. Duckak, | . | 22 | Exeter College, Oxford, | 2,119 |
| Mr. Howell, | . | 22 | St. John's College, Oxford, | 2,100 |
| Mr. Tracy, | . | 21 | Trinity College, Dublin, | 2,092 |
| Mr. Crauikwaite, | . | 21 | St. John's College, Oxford, | 2,087 |
| Mr. Smyth, | . | 21 | Queen's College, Belfast, | 2,051 |
| Mr. Sutherland, | . | 22 | Lincoln College, Oxford, | 1,941 |
| Mr. Moens, | . | 23 | Merton College, Oxford, | 1,914 |

The Colleges of Cork and Galway have each had its contingent of success in the intellectual conflicts for high places and distinction. Let anyone proposing the question of the failure of the Queen's Colleges, dead, in his proper person, with these established facts, which I here, as not unknown to the question of free education in Ireland, feel it my duty to record.

Where success has been so remarkable, and in so many departments, it would almost appear invidious to particularize special cases of it; but that this College should within the last sixteen years have been credited three times with having obtained, through its students, the honour of carrying, besides other distinctions, the great Three Years' Law Scholarship of the London Inns of Courts, is a gratifying fact that establishes the high quality of the

instruction afforded here to the students of Law, Political Economy, and Jurisprudence.

In connexion with this it may be useful to have it known that the Lectures of the Law Professors of the Queen's University are recognized by the Benchers of the King's Inns. Students preparing for the Bar may by the regulations of the Benchers of the King's Inns be called to the Bar in three years instead of five, if Graduates in Arts of the Queen's University.

Also, that students preparing for the profession of Attorney or Solicitor can save two years of their apprenticeship by taking the degree of B.A. or LL.B. in the Queen's University.

If an illustration were required of the advantage and practicability of the full recognition of the principle of united education, this College, like its sister Colleges of Cork and Galway, incontestably furnishes it. Its authorities, its professors, its officers, its students, belonging to different churches and creeds; and now, after twenty-two years' experience as President, I have known only the best results—those of cordiality and friendship—to accrue, for the public and social good, from this union of varied sentiment and opinion, whilst every member of the College claims and concedes alike the perfect exercise of conviction, in matters of public, individual and denominational concern.

In accordance with the provisions of the statutes of the College the sum of £1,400 was allocated at the beginning of the session to scholarships in the various departments, and £100 at the close of the session for prizes at the class examinations.

The various valuable exhibitions founded by private munificence were also awarded to the most deserving competitors, in accordance with the conditions prescribed by the donors.

Very few cases of violation of collegiate discipline during this session required my intervention or that of the council. Industry, zeal, and regularity characterized the conduct of the great body of the students. Any cases of an opposite kind were dealt with fairly and judiciously.

I direct attention to the ample returns I have furnished in the Appendix of the state and condition of the College, with the amount of expenditure, fees received and paid to each professor, together with an enlarged digest of the various subjects of lecture and the papers used at the different examinations.

All of which is testified on behalf of the College by your Majesty's most dutiful servant,

P. SHULDHAM HENRY.

*Queen's College, Belfast,*
  *1st July, 1872.*

# APPENDIX.

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## APPENDIX, No. 1.

### QUEEN'S COLLEGE, BELFAST, and QUEEN'S UNIVERSITY.

THE COLLEGE is a Corporation under the name and style of "QUEEN'S COLLEGE BELFAST." It was founded under the provisions of the Act 8 & 9 Victoria, cap. 66, intituled "An Act to enable Her Majesty to endow new Colleges for the Advancement of Learning in Ireland." Under the powers given by this Act, it was determined to found three Colleges: Belfast, Cork, and Galway, were selected as the sites of these Colleges, and on the 30th day of December, 1845, letters patent were issued, incorporating them. The Presidents and Vice-Presidents of the three Colleges were formed into a Board, called "The Board of Queen's Colleges," for the purpose of drawing up the statutes and arranging the system of education to be pursued in them.

On the 4th of August, 1849, the Professors were appointed, and the Colleges opened for the reception of students on the 30th October, in the same year.

Letters patent, constituting the statutes, were issued on the 11th of December, 1849, and a further charter was issued in the year 1863

### THE COUNCIL OF THE COLLEGE.

The President.
The Vice-President.
W. Nesbitt, M.A., Professor of Latin.
J. Cuming, M.D., Professor of Medicine.
C. MacDouall, LL.D., Professor of Greek.
James Thomson, LL.D., Professor of Civil Engineering.
P. Redfern, M.D., Professor of Anatomy.
J. Purser, M.A., Professor of Mathematics.

### PROFESSORS.

| | |
|---|---|
| The Greek Language, . . . | Charles MacDouall, LL.D., M.R.I.A. |
| The Latin Language, . . . | William Nesbitt, M.A. |
| History and English Literature, | Charles Duke Yonge, B.A. Oxon. |
| Modern Languages, . . . | A. L. Meissner, PH.D. |
| Mathematics, . . . . . | John Purser, M.A., M.R.I.A. |
| Natural Philosophy, . . . | Joseph David Everett, M.A., D.C.L. |
| Chemistry, . . . . . | Thomas Andrews, M.D., F.R.S., M.R.I.A. |
| Natural History, . . . | Robert O. Cunningham, M.D., F.L.S. |
| Logic and Metaphysics, . . | John Veitch, M.A. |
| Civil Engineering, . . . | James Thomson, LL.D., M.I.C.E.I. |
| Agriculture, . . . . | John F. Hodges, M.D., F.C.S. |
| Anatomy and Physiology, . | Peter Redfern, M.D. Lond., F.R.C.S. |
| Practice of Medicine, . . | James Cuming, M.D. |
| Practice of Surgery, . . . | Alexander Gordon, M.D. |
| Materia Medica, . . . | James Seaton Reid, M.D. |
| English Law, . . . . | E. F. Dill, M.D. |
| Jurisprudence and Political Economy, . . . . . | Robin Molyneux, A.M. |
| | T. E. Cliffe Leslie, LL.B. |

#### OFFICE BEARERS.

| | | |
|---|---|---|
| Curator of Museum, | . . | The Professor of Min., Geo., and Nat. Hist. |
| Registrar, | . . . | Rev. Richard Oulton, B.D. |
| Librarian, | . . . | Rev. George Hill. |
| Bursar, | . . . | Alexander Dickey, Esq. |

#### DEANS OF RESIDENCES.

| | |
|---|---|
| United Church of England and Ireland, | Rev. Edward R. Hoare, A.B. |
| General Assembly of the Presbyterian Church in Ireland, | Rev. Josias Leslie Porter, D.D., LL.D. |
| Irish Association of Non-Subscribing Presbyterians, | Rev. John Porter. |
| Wesleyan Methodists, | Rev. William Arthur, M.A. |

The students of the College are either Matriculated or Non-matriculated. All the courses for Matriculated students in Arts, including the Department of Civil Engineering, and also in the Faculties of Medicine and of Law, will be found in the Calendar, which is published annually.

Non-matriculated students, on paying the regulated class fees, and signing an engagement to observe order and discipline in the College, are permitted, without undergoing a preliminary examination, to attend any separate course or courses of Lectures; but are not permitted to become candidates for Scholarships or Prizes, or to enjoy other privileges of the Matriculated students.

Students in any of the Faculties can be admitted *ad eundem* from the other Queen's Colleges, or from any University capable of granting degrees.

#### COLLEGIATE SCHOLARSHIPS.

In the FACULTY OF ARTS—30 Junior Scholarships, of £24 each, are awarded to Undergraduates—15 for proficiency in Literature, and 15 for proficiency in Science; also, 8 Senior Scholarships, of £40 each, to Graduates, one being limited to students who has completed the course for the degree of LL.B.; and 5 Scholarships, of £20 each, to Engineering Students.

In the FACULTY OF MEDICINE—8 Junior Scholarships, of £25 each, are awarded.

In the FACULTY OF LAW—3 Junior Scholarships, of £20 each, are awarded.

#### SCHOLARSHIPS AWARDED IN THE SEVERAL FACULTIES, 1869–70.

7  Senior Scholarships awarded.
19  Junior Scholarships in Arts awarded.
4  Engineering Scholarships.
8  Medical Scholarships.
3  Law Scholarships.

#### 1870–71.

6  Senior Scholarships awarded.
20  Junior Scholarships in Arts awarded.
4  Engineering Scholarships.
8  Medical Scholarships.
3  Law Scholarships.

By an order of Her Majesty in Council, of 21st May, 1855, applying to the Civil Service, it is ordained that "every person nominated to a junior situation should obtain a certificate of qualification before entering on his duties." The ordinary classes in Queen's College embrace the branches required in the Examinations for the Civil Service, and also in the Examination for students intending to become candidates for commissions in the Royal Artillery and Engineers, and for appointments to the Civil Service of India, both of which are now thrown open to public competition.

## QUEEN'S UNIVERSITY IN IRELAND.

Appendix,
No. 1.
Queen's
College.
Belfast, and
Queen's
University.

The charter founding the Queen's University in Ireland received the Royal sanction in the year 1850, and it provides that its Senate should have the power of conferring upon the students of the Queen's Colleges of Belfast, Cork, and Galway, such degrees and distinctions, in the Faculties of Arts, Law, and Physic, as are granted and conferred in other Colleges and Universities of Great Britain and Ireland. It further ordains that any of the students of the three Queen's College, who shall have obtained such degrees in any of the several Faculties of Arts, Medicine, and Law, as shall be conferred by the Chancellor and Senate of the Queen's University, shall be fully possessed of all such rights, privileges, and immunities, as belong to similar degrees granted by other Universities or Colleges, and shall be entitled to whatever rank and precedence is derived from similar degrees granted by other Universities.

By the charter of the Queen's University, candidates for Degrees in Medicine are required to have attended *at least two courses of Medical Lectures* in some one of the Queen's Colleges. For the remainder of the courses of Medical Lectures, authenticated certificates will be received from the Professors or Lecturers in Universities, Colleges, or Schools, recognised by the Senate of the Queen's University in Ireland.

The Chancellor and Senate also have the power of admitting, by special grace, Graduates of other Universities to similar and equal degrees.

In order to obtain a degree or diploma in the Queen's University it is necessary to enter the College as a Matriculated Student, to pass the entrance or Matriculation Examination, and to pursue a fixed course of study.

The Matriculated Students may be classified as follows:—

I. Those intending to proceed to the Degrees of A.B. and A.M.

| II. | " | " | " | Degree of M.D. |
|-----|---|---|---|----------------|
| III. | " | " | " | Diploma of Elementary Law. |
| IV. | " | " | " | Degrees of LL.B. and LL.D. |
| V. | " | " | " | Diploma of Civil Engineering. |
| VI. | " | " | " | Diploma of Surgery. |

## THE SENATE.

*Chancellor.*—The Most Honorable the Marquess of Kildare, M.A. (Oxon.)

*Vice-Chancellor.*—Sir Dominic J. Corrigan, Bart., M.D., M.P., Physician in Ordinary to the Queen in Ireland.

The Right Hon. David R. Pigot, Lord Chief Baron of the Exchequer, M.R.I.A., &c.
The Rev. P. Shuldham Henry, D.D., M.R.I.A., President Queen's College, Belfast.
Sir Robert Kane, M.D., F.R.S., M.R.I.A., &c., President Queen's College, Cork.
Edward Berwick, B.A., President Queen's College, Galway.
Sir Richard Griffith, Bart., LL.D., M.R.I.A., Commissioner of Public Works.
Major-General Sir Thomas Askew Larcom, R.E., K.C.B., LL.D., F.R.S., M.R.I.A., &c.
James Gibson, A.M., Q.C., M.R.I.A., Barrister-at-Law.
The Right Hon. James Henry Monahan, Lord Chief Justice of the Common Pleas.
Robert Adams, A.M., M.D., F.R.C.S.
The Right Honorable Sir Robert Peel, Bart., M.P.
The Right Reverend the Lord Bishop of Killaloe, D.D.
His Grace the Archbishop of Dublin, D.D.
Thomas A. Shillington, Esq., J.P.
The Lord Talbot de Malahide, F.R.S., M.R.I.A.
The Lord Clermont, LL.D.
Right Honorable William Monsell, M.P.
Right Honorable Lord O'Hagan, Lord Chancellor of Ireland.
William K. Sullivan, esq., M.D.
David Ross, M.A., LL.B.
William MacCormac, M.A., M.D.
Thomas William Moffett, LL.D.
*Secretary.*—G. Johnstone Stoney, M.A.—Office, Dublin Castle.

The Senate holds its sitting in Dublin Castle, where the examinations of the students of the three Colleges, for Graduation and University Exhibitions, are annually conducted by Examiners appointed by the Senate from year to year.

# APPENDIX, No. 2.

RETURN of the NUMBER of STUDENTS attending each CLASS in the Queen's College, Belfast, in each Year.

| CLASS. | 1849–50 | '50-51 | '51-52 | '52-53 | '53-54 | '54-55 | '55-56 | '56-57 | '57-58 | '58-59 | '59-60 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Greek—1st year | 71 | 47 | 38 | 16 | 31 | 26 | 29 | 24 | 31 | 36 | 45 |
| „   2nd „ | — | 27 | 18 | 7 | 11 | 12 | 14 | 12 | 15 | 17 | 23 |
| „   Higher | — | — | — | 5 | — | — | — | — | 5 | — | 4 |
| Latin—1st year | 63 | 45 | 37 | 19 | 21 | 24 | 27 | 19 | 33 | 34 | 46 |
| „   2nd „ | — | 27 | 17 | 6 | 11 | 11 | 13 | 10 | 11 | 18 | 21 |
| „   Higher | — | — | — | — | 2 | — | — | — | — | 2 | 3 |
| The English Language | 52 | 46 | 38 | 20 | 24 | 28 | 31 | 24 | 36 | 41 | 49 |
| History and English Literature, Senior | — | 25 | 18 | 20 | 16 | 20 | 19 | 20 | 24 | 24 |  |
| „   Senior | — | 20 | 18 | 16 | 15 | 15 | 19 | 13 | 16 | 13 | 17 |
| Modern Languages (French, German, Italian), Senior | 62 | 36 | 41 | 27 | 34 | 37 | 29 | 40 | 40 | 50 | 76 |
| „   Junior | — | 20 | 18 | 16 | 15 | 15 | 19 | 13 | 16 | 13 | 17 |
| The Celtic Languages | The Lectures in each Session opened to the Public. | | | | | | | | | | |
| Mathematics—1st year | 86 | 58 | 40 | 25 | 39 | 33 | 39 | 35 | 30 | 45 | 51 |
| „   2nd „ | — | 12 | 11 | 11 | 13 | 11 | 13 | 17 | 12 | 14 | 13 |
| „   Higher | — | — | — | — | — | — | — | — | — | 4 | 6 |
| Nat. Philosophy—Higher Class | — | — | — | — | — | 6 | 6 | 8 | 7 | 4 | 9 |
| „   Mathematical Physics | 32 | 33 | 46 | 24 | 29 | 23 | 24 | 19 | 26 | 35 | 54 |
| „   Experimental Physics | 48 | 39 | 37 | 29 | 40 | 34 | 36 | 37 | 41 | 38 | 61 |
| „   Practical Mechanics | 7 | 3 | 6 | 3 | 4 | 3 | 2 | 2 | — | — | — |
| Natural Philosophy applied | — | — | — | — | — | — | — | 7 | 5 | 4 |  |
| Chemistry | 37 | 53 | 65 | 44 | 51 | 60 | 50 | 70 | 60 | 76 | 81 |
| Practical Chemistry | 6 | 7 | 14 | 10 | 12 | 14 | 12 | 10 | 11 | 14 | 21 |
| Laboratory | — | — | 5 | 8 | 9 | 9 | 10 | 15 | 10 | 11 | 10 |
| Zoology | 12 | 34 | 36 | 29 | 31 | 43 | 31 | 45 | 34 | 42 | 36 |
| Botany | 13 | 49 | 46 | 25 | 37 | 46 | 56 | 44 | 54 | 62 | 55 |
| Physical Geography | — | — | 29 | 17 | 21 | 19 | 20 | 21 | 28 | 33 | 28 |
| Logic | 3 | — | 27 | 17 | 21 | 20 | 20 | 27 | 22 | 29 | 23 |
| Metaphysics | — | — | 18 | 15 | 16 | 11 | 17 | 20 | 15 | 19 | 15 |
| Higher Logic and Metaphysics | — | — | 6 | 7 | 7 | 6 | 6 | 7 | 9 | 8 |  |
| Mineralogy and Geology | Public. | 6 | 14 | 15 | 15 | 13 | 9 | 10 | 13 | 11 | 16 |
| Surveying | 10 | 9 | 9 | 6 | 9 | 9 | 9 | 4 | — | 7 | 12 |
| Civil Engineering | — | 4 | 6 | 3 | 4 | 3 | 4 | 17 | 14 | 3 | 4 |
| Theory of Agriculture | 11 | 8 | 7 | 2 | 5 | 5 | 5 | 5 | 6 | 7 | 7 |
| Practice of Agriculture | — | 5 | 3 | 2 | 5 | 5 | 1 | 1 | 3 | 1 | 4 |
| Diseases of Farm Animals | — | 5 | — | 2 | 9 | 5 | 1 | 4 | — | 4 | 3 |
| Medical Jurisprudence | 2 | 5 | 14 | 10 | 13 | 9 | 10 | 15 | 16 | 15 | 17 |
| Anatomy | 25 | 36 | 45 | 45 | 44 | 51 | 44 | 39 | 33 | 39 | 40 |
| Practical Anatomy | 27 | 33 | 55 | 49 | 41 | 46 | 52 | 33 | 36 | 44 | 44 |
| Practice of Medicine | 9 | 17 | 17 | 12 | 15 | 18 | 33 | 27 | 19 | 23 | 39 |
| Practice of Surgery | 24 | 15 | 29 | 29 | 25 | 30 | 46 | 33 | 41 | 38 | 39 |
| Materia Medica | 11 | 14 | 16 | 17 | 17 | 22 | 25 | 15 | 11 | 18 | 23 |
| Midwifery | 14 | 10 | 12 | 16 | 17 | 18 | 24 | 15 | 7 | 17 | 14 |
| Law of Property, Equity of Bankruptcy, Common and Criminal Law, Evidence and Pleading, Jurisprudence and Political Economy, Arm, | 17 | 16 | 17 | 15 | 11 | 6 | 10 | 14 | 12 | 13 | 16 |
| Civil Law | — | — | 12 | 2 | 9 | 6 | 8 | 2 | 18 | 9 | 7 |
| Constitutional, Colonial, and International Law | 11 | 11 | 13 | 8 | 10 | 5 | 9 | 10 | 10 | 11 | 17 |
| Jurisprudence | — | — | — | — | — | — | — | — | — | 4 | 7 |
| Arabic | — | — | — | — | — | — | — | — | — | — | 1 |
| Hindostani | — | — | — | — | — | — | — | — | — | — | 3 |
| Sanscrit | — | — | — | — | — | — | — | — | — | — | 6 |

APPENDIX, No. 2—continued.

RETURN of the NUMBER of STUDENTS attending each CLASS in the Queen's College, Belfast, in each YEAR—continued.

| CLASS. | '60-61. | '61-62. | '62-63. | '63-64. | '64-65. | '65-66. | '66-67. | '67-68. | '68-69. | '69-70. | '70-71. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Greek—1st year, | 69 | 81 | 85 | 66 | 79 | 65 | 62 | 43 | 41 | 37 | |
| „ 2nd „ | 25 | 49 | 63 | 44 | 49 | 49 | 21 | 19 | 24 | 11 | 32 |
| „ Higher, | 4 | 7 | 7 | 19 | 12 | 6 | 4 | 5 | 9 | 1 | |
| Latin—1st year, | 80 | 88 | 83 | 65 | 78 | 64 | 80 | 48 | 43 | 44 | 39 |
| „ 2nd „ | 33 | 49 | 69 | 40 | 53 | 44 | 40 | 34 | 37 | 19 | 32 |
| „ Higher, | 2 | 6 | 6 | 8 | 7 | 4 | 9 | 7 | 4 | 5 | |
| The English Language, | 73 | 95 | 85 | 70 | 80 | 67 | 49 | 48 | 45 | 37 | |
| History, | 5 | 5 | 8 | 4 | 4 | 6 | 9 | 5 | 16 | 12 | |
| English Literature, | 20 | 30 | 41 | 52 | 43 | 42 | 41 | 55 | 38 | 39 | |
| Modern Languages (French, German, Italian), | 140 | 134 | 110 | 99 | 110 | 115 | 109 | 115 | 96 | 94 | 92 |
| Senior | 10 | 54 | 43 | 36 | 56 | 36 | 46 | 45 | 33 | 32 | 33 |
| The Celtic Language, | No such Class this Session up to this Period. | | | | | | | | | | |
| Mathematics—1st year, | 83 | 95 | 102 | 65 | 73 | 62 | 66 | 58 | 87 | 44 | |
| „ 2nd „ | 13 | 13 | 15 | 20 | 17 | 19 | 12 | 22 | 24 | 22 | 17 |
| „ Higher, | 3 | | 3 | 6 | 4 | 4 | 6 | 8 | 7 | 3 | |
| Nat. Philosophy—Higher Class, | 64 | 67 | 73 | 69 | 69 | 68 | 56 | 51 | 45 | 52 | 44 |
| „ Mathematical Physics, &c. | 37 | 86 | 96 | 95 | 87 | 122 | 104 | 90 | 35 | 78 | 86 |
| „ Experimental Physics, | 21 | 18 | 5 | 6 | 5 | 5 | 5 | 4 | 6 | 9 | 6 |
| Natural Philosophy applied, | 2 | 1 | 6 | 4 | 7 | 4 | 6 | 10 | 5 | 3 | |
| Chemistry, | 64* | 89 | 89 | 81 | 93 | 95 | 91 | 84 | 86 | 84 | 108 |
| Practical Chemistry, | 21 | 20 | 24 | 28 | 44 | 37 | 44 | 51 | 44 | 30 | 59 |
| Laboratory, | 13 | 15 | 15 | 6 | 14 | 16 | 14 | 16 | 20 | 17 | 13 |
| Zoology, | 37* | 57 | 66 | 50 | 63 | 84 | 92 | 58 | 73 | 51 | 61 |
| Botany, | 40* | 34 | 60 | 50 | 92 | 97 | 87 | 51 | 55 | 43 | 60 |
| Physical Geography, | 20 | †7 | 7 | | | | | | 5 | | |
| Logic, | 35 | 63 | 65 | 57 | 49 | 68 | 52 | 43 | 48 | 58 | 49 |
| Metaphysics, | 24 | 23 | 34 | 30 | 29 | 33 | 19 | 30 | 33 | 20 | |
| Higher Logic, | 10 | 12 | 25 | 24 | 24 | 24 | 33 | 22 | 21 | 15 | 15 |
| Mineralogy and Geology, | 13 | 14 | 12 | 9 | 14 | 14 | 15 | 9 | 11 | 6 | 10 |
| Engineering, 1st year, | 5 | 10 | 11 | 13 | 15 | 14 | 13 | 8 | 13 | 11 | 5 |
| Engineering, 2nd year, lectures, | 6 | 4 | 12 | 10 | 4 | 10 | 4 | 9 | 4 | 8 | 4 |
| „ „ practice, | | | | 4 | 12 | 6 | 5 | 7 | 4 | 4 | |
| Engineering, 3rd year, lectures, | 4 | 5 | 5 | 3 | 3 | 4 | 6 | | | | |
| „ „ practice, | 8 | 4 | | 3 | | 4 | 6 | | | | |
| Theory of Agriculture, | 5 | 6 | | | | | | | | | |
| Practice of Agriculture, | 3 | | | | | | | | | | |
| Diseases of Farm Animals, | 3 | 1 | | | | | | | | | |
| Medical Jurisprudence, | 14 | 18 | 25 | 30 | 28 | 33 | 23 | 24 | 27 | 14 | 14 |
| Anatomy, | 86 | 83 | 92 | 91 | 88 | 83 | 109 | 137 | 130 | 147 | 181 |
| Practical Anatomy, | 80 | 85 | 91 | 96 | 123 | 124 | 149 | 139 | 160 | 140 | 182 |
| Practice of Medicine, | 25 | 35 | 37 | 36 | 50 | 44 | 48 | 67 | 63 | 53 | 71 |
| Practice of Surgery, | 51 | 53 | 53 | 46 | 48 | 55 | 77 | 81 | 75 | 61 | 72 |
| Materia Medica, | 33 | 38 | 37 | 39 | 36 | 47 | 47 | 34 | 46 | 38 | 45 |
| Midwifery, | 26 | 36 | 24 | 27 | 26 | 34 | 45 | 31 | 30 | 30 | |
| Law of Property, | | | | | | | | | | | |
| Equity and Bankruptcy, Common and Criminal Law, Evidence and Pleading, | 16 | 14 | 12 | 12 | 18 | 17 | 14 | 8 | 21 | 14 | 27 |
| Political Economy, Arts, | 10 | 8 | 18 | 17 | 16 | 15 | 16 | 8 | 10 | 14 | 12 |
| Civil Law ; Constitutional, Colonial, and International Law ; Jurisprudence, | | | | | | | | | | | |
| Arabic, | | | | 3 | 3 | 1 | | | | | |
| Hindustani, | | | | | | 3 | | | | | |
| Sanskrit, | | | | | | | 1 | | | | |
| Operative Surgery, | | | | | | | | 12 | 7 | | |

* No Arts Students this Session, owing to change of Statutes.
† Not now required in third year Arts.
‡ No Engineering Students this Session, owing to change of Statutes.

APPENDIX,

RETURN of the Amount of Fees received by each

| Professor of | 1849-50 | 1850-51 | 1851-52 | 1852-53 | 1853-54 | 1854-55 | 1855-56 | 1856-57 | 1857-58 | 1858-59 |
|---|---|---|---|---|---|---|---|---|---|---|
| | £. s. d. | £. s. d. | £. s. d. | £. s. d. | £. s. d. | £. s. d. | £. s. d. | £. s. d. | £. s. d. | £. s. d. |
| Greek, | *78 10 | 55 5 | 50 0 | 27 3 | 53 3 | 46 5 | 51 5 | 44 15 | 51 0 | 78 0 |
| Latin, | *73 15 | 72 0 | 59 10 | 31 5 | 58 5 | 44 3 | 47 15 | 39 15 | 53 15 | 57 10 |
| English History and Literature, | 56 5 | 50 5 | 47 10 | 31 5 | 43 5 | 45 5 | 59 5 | 43 15 | 57 10 | 69 0 |
| Logic and Metaphysics, | 6 | 50 10 | †19 5 | 34 5 | 37 15 | 41 0 | 41 15 | 48 5 | 46 15 | 68 0 |
| Mathematics, | 100 15 | 70 10 | 59 15 | 43 0 | 54 0 | 50 0 | 69 10 | 62 15 | 48 10 | 93 15 |
| Natural Philosophy, | 79 5 | 70 15 | 59 10 | 47 0 | 73 15 | 76 15 | 59 10 | 62 15 | 72 0 | 63 10 |
| Practical Chemistry, | 55 5 | 104 0 | 117 5 | 81 10 | 111 10 | 125 15 | 105 10 | 153 0 | 113 10 | 147 5 |
| Anatomy and Physiology, | 143 0 | 179 0 | 195 15 | 230 10 | 220 0 | 250 0 | 236 10 | 181 0 | 266 0 | 262 10 |
| Practical Anatomy, | | | | | | | | | | |
| Natural History and Botany, | 20 10 | 69 0 | 70 15 | 50 15 | 53 0 | 76 15 | 39 10 | 56 0 | 52 10 | 105 5 |
| Modern Languages, | 97 0 | 34 0 | 63 0 | 50 0 | 61 0 | 35 0 | 74 0 | 68 0 | 96 0 | 129 0 |
| Mineralogy and Geology, | | 7 10 | 24 15 | 17 15 | 20 15 | 18 0 | 12 0 | 37 0 | 20 5 | 21 15 |
| Jurisprudence and Political Economy, | 9 10 | 7 0 | 21 0 | 22 0 | 28 0 | 14 10 | 25 0 | 22 10 | 31 15 | 28 15 |
| English Law, | 22 0 | 29 0 | 27 0 | 33 0 | 30 0 | 40 0 | 35 0 | 27 0 | 21 0 | 25 0 |
| Civil Engineering, | 16 0 | 24 10 | 27 0 | 14 0 | 17 15 | 21 0 | 13 10 | 27 0 | 22 0 | 21 15 |
| Agriculture and Ancient Jurisprudence, | 15 10 | 41 0 | 49 5 | 22 0 | 46 0 | 32 15 | 26 0 | 25 10 | 48 5 | 21 5 |
| Principles and Practice of Medicine, | 11 0 | 31 0 | 32 0 | 18 0 | 20 0 | 30 0 | 34 0 | 43 10 | 36 0 | 37 0 |
| Surgery, | 41 0 | 51 0 | 44 0 | 34 0 | 55 0 | 52 0 | 62 0 | 42 0 | 32 0 | 44 0 |
| Materia Medica, | 22 0 | 28 0 | 26 0 | 29 0 | 33 0 | 43 0 | 45 0 | 39 0 | 31 0 | 26 0 |
| Midwifery, | 4 0 | 11 0 | 20 0 | 17 0 | 21 0 | 18 0 | 14 0 | 9 0 | 13 0 | 18 0 |
| Teacher of Drawing, | | | | | | | | 32 0 | 25 0 | 26 0 |

* In the Session of 1849-50, Medical Students were required to attend the Greek and Latin Classes, but have since been exempt from attending either class.

† Professor M'Cosh was appointed in Session 1851-52, and taught and received fees from Students properly belonging to the previous Session.

Queen's College, Belfast, May, 1871.

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APPENDIX,

ACCOUNT of the Expenditure of One Year's Additional Grant.

**1. Library of Ancient and Modern Literature and Philology:**

| | £. s. d. |
|---|---|
| Ancient Classical Languages and Philology, | 27 3 11 |
| English History and Literature, | 20 7 6 |
| Foreign Modern Languages, | 16 18 3 |
| Works of General Interest, &c., | 73 8 9 |
| | 138 3 5 |

**2. Libraries, Museum, &c., Mathematical, Physical, and Chemical Science:**

| | £. s. d. |
|---|---|
| Mathematical and Physical Libraries, | 21 3 4 |
| Chemical Library, | 37 10 0 |
| Museum and Cabinet of Physical Science, | 4 4 2 |
| Laboratory, Chemical Science, | 50 11 0 |
| | 114 8 6 |

No. 3.

## Professor in the Queen's College, Belfast, in each Year.

| 1859-60. | | 1860-61. | | 1861-62. | | 1862-63. | | 1863-64. | | 1864-65. | | 1865-66. | | 1866-67. | | 1867-68. | | 1868-69 | | 1869-70. | | 1870-71. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| £ | s. | £ | s. | £ | s. | £ | s. | £ | s. | £ | s. | £ | s. | £ | s. | £ | s. | £ | s. | £ | s. | £ | s. |
| *93 | 5 | *131 | 15 | *186 | 0 | *187 | 15 | *221 | 0 | 233 | 10 | 212 | 0 | 131 | 0 | 121 | 0 | 127 | 0 | 109 | 0 | 114 | 0 |
| †90 | 0 | 127 | 15 | 185 | 0 | 185 | 15 | 211 | 0 | 220 | 10 | 202 | 0 | 167 | 0 | 152 | 0 | 155 | 0 | 154 | 0 | 132 | 0 |
| 94 | 15 | 117 | 5 | 155 | 10 | 164 | 5 | 163 | 10 | 162 | 10 | 131 | 10 | 143 | 10 | 130 | 10 | 107 | 10 | 121 | 0 | 123 | 0 |
| 39 | 0 | 58 | 10 | 106 | 5 | 134 | 10 | 173 | 10 | 143 | 0 | 183 | 10 | 184 | 10 | 140 | 10 | 139 | 10 | 117 | 0 | 98 | 10 |
| 139 | 10 | 150 | 0 | 183 | 5 | 211 | 5 | 201 | 0 | 208 | 0 | 173 | 0 | 143 | 0 | 135 | 0 | 132 | 0 | 148 | 0 | 117 | 0 |
| 61 | 5 | 180 | 10 | 178 | 15 | 194 | 10 | 183 | 0 | 186 | 0 | 208 | 0 | 198 | 0 | 192 | 0 | 183 | 0 | 177 | 0 | 164 | 0 |
| 184 | 0 | 167 | 0 | 195 | 15 | 210 | 5 | 213 | 10 | 294 | 10 | 252 | 0 | 277 | 10 | 299 | 0 | 284 | 10 | 249 | 10 | 276 | 0 |
| 307 | 0 | 427 | 10 | ‡432 | 10 | ‡425 | 10 | ‡453 | 10 | 567 | 10 | 544 | 0 | 643 | 14 | 652 | 8 | 731 | 18 | 592 | 1 | 669 | 10 |
| 94 | 10 | 70 | 0 | 96 | 10 | 120 | 5 | 157 | 0 | 170 | 0 | 144 | 0 | 154 | 0 | 165 | 0 | 133 | 0 | 104 | 0 | 142 | 0 |
| 159 | 10 | 277 | 0 | 319 | 5 | 270 | 15 | 231 | 0 | 278 | 0 | 247 | 0 | 268 | 0 | 280 | 0 | 245 | 0 | 255 | 0 | 226 | 0 |
| 24 | 15 | 11 | 10 | 16 | 5 | 20 | 10 | 22 | 0 | 25 | 0 | 24 | 0 | 9 | 0 | 20 | 0 | 7 | 0 | 16 | 0 | 20 | 0 |
| 36 | 10 | 28 | 10 | 25 | 15 | 37 | 10 | 38 | 0 | 51 | 0 | 51 | 0 | 46 | 0 | 37 | 0 | 40 | 0 | 56 | 0 | 65 | 0 |
| 28 | 0 | 28 | 0 | 25 | 0 | 21 | 0 | 18 | 0 | 20 | 0 | 25 | 0 | 23 | 0 | 35 | 0 | 31 | 0 | 43 | 0 | 56 | 0 |
| 24 | 15 | 32 | 0 | 40 | 15 | 70 | 0 | 82 | 0 | 97 | 0 | 79 | 0 | 68 | 0 | 70 | 0 | 78 | 0 | 66 | 0 | 51 | 0 |
| 47 | 0 | 43 | 0 | §44 | 0 | §36 | 15 | 48 | 0 | 55 | 0 | 48 | 0 | 67 | 0 | 63 | 0 | 68 | 0 | 61 | 0 | 73 | 0 |
| 44 | 0 | 37 | 0 | 64 | 10 | 46 | 0 | 59 | 0 | 74 | 0 | 77 | 0 | 103 | 0 | 103 | 0 | 92 | 0 | 96 | 0 | 103 | 0 |
| 65 | 10 | 79 | 13 | 84 | 12 | 96 | 11 | 73 | 0 | 82 | 0 | 94 | 0 | 137 | 0 | 144 | 0 | 131 | 0 | 115 | 0 | 134 | 0 |
| 50 | 0 | 60 | 0 | 69 | 0 | 70 | 0 | 59 | 0 | 73 | 0 | 83 | 0 | 86 | 0 | 71 | 0 | 89 | 0 | 73 | 0 | 77 | 0 |
| 25 | 0 | 48 | 0 | 63 | 0 | 36 | 0 | 66 | 0 | 36 | 0 | 42 | 0 | 64 | 0 | 72 | 0 | 93 | 0 | 78 | 0 | 79 | 0 |
| 22 | 0 | – | | – | | – | | – | | – | | – | | – | | – | | – | | – | | – | |

* Besides for Sanskrit and Hindustani, 1859–60, £35; 1860–61, £22 10s.; 1861–62, £25; 1862–63, £32 10s.; 1863–64, £20; 1864–5, £20.

† Besides for Arabic in 1859–60, £5.

‡ The Professor of Anatomy pays to his Demonstrator a portion of the fees for Practical Anatomy.

§ No endowment for Medical Jurisprudence. Professor Hodges delivers the lectures, receiving only class fees.

ALEXANDER DICKEY, *Bursar*.

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No. 4.

*Appendix, No. 4.*

Expenditure of One Year's Additional Grant.

## to the Queen's College, Belfast, ending 31st March, 1870.

3. Libraries, Museum, and Collection of Objects of the Department of the Natural Sciences:

| | £ | s. | d. |
|---|---|---|---|
| Library of Natural History, and Geology and Mineralogy, . | 15 | 17 | 2 |
| Museum of Natural History, and Geology and Mineralogy, . | 91 | 18 | 5 |
| | 107 | 15 | 7 |

4. Libraries, Museums, and Collections of Objects of the Department of Engineering:

| | £ | s. | d. |
|---|---|---|---|
| Library of Engineering, . . . . . . | 3 | 14 | 0 |
| Instruments and Collections of Engineering, . . . | 28 | 5 | 11 |
| | 31 | 19 | 11 |

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ACCOUNT of the EXPENDITURE of ONE YEAR'S ADDITIONAL GRANT
to the Queen's College, Belfast, ending 31st March, 1870—
*continued.*

|  |  | £ | s. | d. |
|---|---|---|---|---|
| 5. Museum and Library of Medical Science: |  |  |  |  |
| Library of Medical Works, | . | 42 | 5 | 0 |
| Anatomical and Pathological Museums, &c., | . | 78 | 18 | 2 |
| Surgical Museum, | . | 3 | 15 | 0 |
| Medical Jurisprudence, | . | 13 | 8 | 3 |
| Midwifery, | . | 12 | 7 | 5 |
| Prac. of Medicine, | . | 5 | 4 | 0 |
|  |  | 153 | 17 | 10 |
| 6. Library of Metaphysical, Legal, and Economical Science : |  |  |  |  |
| Law, Jurisprudence, and Political Economy, | . | 24 | 0 | 4 |
| Metaphysics, | . | 10 | 7 | 6 |
|  |  | 34 | 7 | 10 |
| 7. Printing, Stationery, Advertising, Postages, Office Expenses, &c., | . | 299 | 7 | 11 |
| 8. Heating and Lighting, | . | 157 | 19 | 2 |
| 9. Grounds, | . | 60 | 0 | 4 |
| Balance in Bank of Ireland Office, 31st March, 1869, | . | 874 | 1 | 5 |
| Total, | . | 1,481 | 1 | 11 |
| Amount of One Year's additional Grant, | . | 1,000 | 0 | 0 |
| College and Matriculation Fees, | . | 109 | 5 | 0 |
| Balance in Bank, 31st March, 1868, | . | 371 | 16 | 11 |
| Total, | . | 1,481 | 1 | 11 |

The Accounts of the College up to 31st March, 1869, have been examined and
found correct by the Commissioners for Auditing the Public Accounts.

*May,* 1871.

ALEXANDER DICKEY, *Bursar.*

## GENERAL CLASS EXAMINATIONS, Queen's College, Belfast.

| | | Summer 1909-10. | | | | Summer 1910-11. | | |
|---|---|---|---|---|---|---|---|---|
| | | Day. | Date. | A.M. | P.M. | Day. | Date. | A.M. | P.M. |

Return of the Number of Lectures delivered by each Professor in the Queen's College, Belfast, in each Year.

| Professor of— | | | | | | | | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Greek, ......... | | | | | | | | | | | | | | In addition, examining continuation classes. |
| Latin, ......... | | | | | | | | | | | | | | |
| History and English Literature, ... | | | | | | | | | | | | | | Sundry corresponding classes held. |
| Modern Languages, ... | | | | | | | | | | | | | | |
| Celtic, ......... | | | | | | | | | | | | | | Open to the Public without charge. |
| Mathematics, ... | | | | | | | | | | | | | | Session lasts half-year, and some tutorial classes held. |
| Natural Philosophy | | | | | | | | | | | | | | Session lasts half-year. The Professor, in addition, conducts an experimental class twice a-week. |
| Chemistry, ...... | | | | | | | | | | | | | | In addition, superintending practical work, and daily attendance. |
| Practical Chemistry | | | | | | | | | | | | | | Carried on daily through the session, in works for advanced students, with every opportunity given for experimental work. |
| Natural History, | | | | | | | | | | | | | | Attendance lectures. Practical demonstrations given to all students. |

| Mineralogy and Geology | | | | | | | | | | | | | | | | | | Examination, daily; attendance on Examinations by the Masters. |
| Logic & Metaphysics | | | | | | | | | | | | | | | | | | |
| Civil Engineering | | | | | | | | | | | | | | | | | | |
| Agriculture | | | | | | | | | | | | | | | | | | Examination on the Practice of Medicine. |
| Anatomy and Physiology | | | | | | | | | | | | | | | | | | |
| Practical Medicine | | | | | | | | | | | | | | | | | | |
| Practice of Surgery | | | | | | | | | | | | | | | | | | |
| Materia Medica, Midwifery | | | | | | | | | | | | | | | | | | |
| English Law | | | | | | | | | | | | | | | | | | |
| Jurisprudence & History, Ethical &c. | | | | | | | | | | | | | | | | | | |

| Days | | First Year Students | Second Year Students | Third Year Students | Fourth Year Students |
|---|---|---|---|---|---|
| Tuesday, Oct. 17 | 9—10 | | English. | | Senior School—Latin. |
| | 10—12 | Engl. Eng. | Mod. Lang. | Nat. Phil., Math., Log., Mod. Hist. | |
| | 12—2 | | Math. | | |
| | 2—3 | Engl. Lat.—Greek. | | Engl. Eng.—Greek, Latin, Engl. | Senior School—Greek |
| Wednesday, Oct. 18 | 9—10 | | | | |
| | 10—12 | Latin School—Greek. | | | Senior School—Greek |
| | 2—3 | Latin School—Greek. | | | |
| Thursday, Oct. 19 | 9—10 | | | | |
| | 10—12 | Maths.—Math. | Nat. Phil., Math. | | Senior School—Chem. |
| | 12—2 | | Engl. School—Chem. | | |
| Friday, Oct. 20 | 10—12 | Maths.—Greek, Latin. | | | |
| Saturday, Oct. 21 | 9—10 | Mener.—English, Mod. Lang. | | | Senior School—Mod. Hist. |
| | 10—12 | Mener.—Math. | | | Senior School—Mod. Lang. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Monday, Oct. 22 | 9—10 | Latin of Matriculated Students to be made out. | Math. Schol.—Botany. | Engin. Schol.—Math. | Senior Schol.—Anat. Med.-Schol.—Dis. and Phys. |
| | 10—11 | | | Engin. Schol.—Math. | |
| Tuesday, Oct. 23 | 9—10 | | Science Schol.—Math. | | Senior Schol.—Math. |
| | 10—11 | Schol.—Math. | Med. Schol.—Anat. and Phys. | | |
| Wednesday, Oct. 24 | 9—10 | Schol.—English. | Engin. Schol.—Eng. Phys. | | Senior Schol.—Nat. Phil. Med. Schol.—Mat. Med. |
| | 10—11 | | | | |
| Thursday, Oct. 25 | 9—10 | Schol.—Math. | Science Schol.—Math. | | Senior Schol.—Chem. Med. Schol.—Chem. |
| | 10—11 | | Engin. Schol.—Eng. Trans. | | |
| Friday, Oct. 26 | 9—10 | Schol.—Greek. | Elem. Schol.—Eng. Lang. | | Senior Schol.—Nat. Hist. Med. Schol.—Physiology |
| | 10—11 | | | | |

*Students passing the Supplementary Examinations complete the previous year, and take such accordingly.*

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| Form | Arts | | | Civil Engineering | | | Mining |
|---|---|---|---|---|---|---|---|
| | 1st Form | 2nd Form | 3rd Form | 1st Form | 2nd Form | 3rd Form | |

**SUMMER MUSICAL CLASSES, COMMENCING MAY 1, 1871.**

Practical Chemistry ... ... ... Monday, Tuesday, Wednesday, Thursday, Friday, at 10 A.M.
Botany ... ... ... ... Monday, Tuesday, Wednesday, Thursday, Friday, at 12.
Experimental Physics ... ... ... Monday, Tuesday, Wednesday, Thursday, 11 A.M.

**FACULTY OF LAW.—ORDER OF LECTURES.**

| 1st Year | 2nd Year | 3rd Year | 4th Year |
|---|---|---|---|

# APPENDIX, No. 7.

*Appendix,*
*No. 7.*

*Digest*
*of Subjects*
*and*
*Courses.*

An ENLARGED DIGEST of SUBJECTS and COURSES pursued in Queen's College, Belfast.

GREEK—*Professor, Charles MacDouall, LL.D., M.R.A.S.*

In the Greek Class, as in all those which are attended during more than one session, the business, as well as the hours assigned to the Students of the different years, is necessarily different; but it is always distributed into three simultaneous processes, viz., public examinations, lectures more or less formal, and exercises written at home and commented on in the class.

In the first session, the complex and self-contained structure of the Greek language is subjected to a close analysis; carried out, on the one hand, by tracing words to their crude forms, by classifying terminations, both the primary and the flexional, and by discriminating among analogically correct forms those actually used in different ages and dialects; on the other hand, by exhibiting the methods by which words are combined in simple clauses, clauses are knit into sentences, and sentences compose periods less or more complicated. Some prose-work furnishes the materials for this analysis; while the Students read and translate it, or else re-translate off-hand passages read out in English before them by the Professor. Besides syntactical phenomena, the laws and characteristics of both epic and dramatic versification are expounded and exemplified, while a portion of the *Ilias* and some tragedy are read as text-books.

In the second session, while consecutive passages of Herodotus along with some Attic oration or philosophical treatise, and a portion of the *Odysseia* along with some Attic tragedy or comedy, form the basis of prelections, the previous discipline is continued and extended; the distinctions of dialect and style are more fully elucidated; the origin, growth, and fortunes of the epos, the drama, history, and other departments of literature, are more distinctly unfolded; discussions on points of mythology, geography, chronology, archæology, æsthetics, &c., are more freely introduced and more amply treated. The Students are required to turn Herodotean Greek, at night, into Attic, altering both the forms of words and the structure of sentences; to re-translate passages into Greek prose and verse; and also to give in original essays in both forms of composition.

In a distinct or higher class, advanced Students, generally in the third or fourth year of their Course, are exercised in the study of more difficult works than those previously read, in the higher problems of criticism and philology, and especially in composing both prose and verse.

The following Text-books have been used in the successive Sessions of College from 1849-50 to 1855-56:—The *Ilias*—all the Books except I., II., IV., V., VII.; the *Odysseia,* Books I. to XVI. (inclusive); Hesiodus, *Theogonia;* Pindarus, *Olympia, Pythia, Nemea;* Æschylus, all the Tragedies except the *Supplices;* Sophocles, the seven Tragedies; Euripides, *Alcestis, Hippolytus, Hecuba, Phœnissæ, Orestes, Helena, Hercules Furens, Bacchæ, Ion, Rhesus, Troades, Andromache, Iphigeneia in Aulide, Iphigeneia in Tauris;* Aristophanes, *Nubes, Aves, Ranæ;* Herodotus, Books I., II., III., IV., VII., IX.; Thucydides, Books I., II.; Xenophon, Portions of *Anabasis* and *Cyropædeia;* Plato, *Apologia Socratis, Gorgias, Phædo, Phædrus, Philebus, Protagoras, Theœtetus, Timæus,* and Books I., VII., and X. of *Respublica;* Aristoteles, *Poetica* and portions of *Rhetorica;* Demosthenes, *c. Meidiam* and *De Corona;* Æschines, *in Ctesiphontem.*

The SANSKRIT and HINDUSTANI CLASSES, conducted during six Sessions by the Professor of Greek, have been discontinued.

LATIN—*Professor,* William Nevisit, M.A.

The Professor of Latin gives three lectures weekly to Students of the First, and the same number to Students of the Second Year, attendance upon which is compulsory for those who take the Latin Classes. Besides these compulsory lectures, he gives two lectures additional to Students of each of these years, attendance on which is voluntary, in which more difficult authors are read, and special attention is paid to composition. The attendance on these lectures is very good.

An honor Class has been formed of Students of the Third and Fourth Years, chiefly attended by those who are anxious to distinguish themselves in Ancient Classics at the Degree Examination.

The number of hours during which the Professor lectures each week is thirteen.

*(margin note:)* Appendix, No. 7.
Digest of Subjects and Courses.

HISTORY AND ENGLISH LITERATURE—*Professor,* Charles Duke Yonge, A.B. OXON.

*Class of the English Language.*

The business of this Class is conducted by—

A Course of Lectures on the Origin, Formation, Inflections, and Grammar of the English Language, for which Dr. Latham's "English Language" forms in some degree the text-book;

With occasional Lectures on the rules and principles of Prose Composition, and Weekly Essays.

*Class of English Literature.*

The business of this Class is conducted by—

A Course of Lectures on English Literature in general, and particularly on the lives, works, and styles of the best authors in each department;

With Special Lectures also on the works appointed as the subjects for the Dublin Autumnal Examination of the ensuing year, with and without Honors;

And Fortnightly Essays.

*Class of History.*

The business of this Class is conducted by—

Lectures on History in general ;

Lectures on English History, embracing rather the larger half of the entire course ;

A subsequent course on the History or that portion of the History of any other country which is selected as a subject for the Dublin Autumnal Examination of the ensuing year.

MODERN LANGUAGES—*Professor,* Albert Ludwig Meissner, PH.D.

The instruction in Modern Continental Languages embraces three courses each for French and German, extending over three terms, and a course of Italian during the first two terms, attendance on which is voluntary.

No entrance examination is as yet held in Modern Languages, in consequence of which the insufficiency of intermediate teaching is more apparent in this department than perhaps in any other. The consequence of this is, that the Professor is over-burdened with a great amount of elementary teaching, without which his classes cannot be kept in good working order. The number of lectures delivered during the past session was no less than 406. Something, it is hoped, may be done to relieve the Professor of some part of the elementary teaching, so as to increase his usefulness in the more advanced classes.

Students in Arts and Medicine, and in the department of Engineering, are required to attend lectures on one Modern Language for one session. The majority select for this purpose the French language ; several, however, attend both French and German. For Students in Arts of the second and higher years, Modern Languages form one in a group of four subjects, out of which they select two.

Appendix,
No. 7.
Digest
of Subjects
and
Courses.

The work of the classes, especially during the first two terms, is carried on to a great extent by means of *vivâ voce* questions and answers. Frequent oral examinations are held, and at each meeting of the classes a passage is translated from English into French or German.

In the First Session the Grammar and the principles of composition are explained, and select passages are translated from French and German Classics.

In the Second Session a systematic course of composition is gone through, and the Students are made acquainted with the principal authors of French and German Literature.

In the Third Session a course on the elements of Comparative Grammar is delivered, which is followed by a course on some period of Continental Literary History. The students write essays in Modern Languages, which are read and discussed in the class.

Medical Students unable to attend the classes in Arts, are instructed in a separate class.

About six per cent. of the Students attending Lectures on Modern Languages are Non-Matriculated.

MATHEMATICS—Professor, *John Purser,* M.A.

Attendance on this Class is prescribed to all Students in the Faculty of Arts during the first year of their Course; during the second year Mathematics forms one of four Courses, out of which the Students select two.

All Students in the Department of Engineering are required to attend the Mathematical Classes during two years.

Before entering, Students are required to pass an examination in the First and Second Books of Euclid, and in a small portion of Algebra. Practically they come fairly prepared in the prescribed portions of Euclid, but a large proportion can hardly be said to possess even an elementary knowledge of Algebra. A considerable number of the Students are Candidates for Matriculation Scholarships at entrance, and these are generally well prepared in the first six Books of Euclid, and a considerable portion of Algebra and Plane Trigonometry.

On this account the instruction of the First Year in Mathematics has been given in two Divisions. The Lower Division is carefully taken through such portions of Euclid I., II., III., IV., VI., as they have not previously prepared, and is instructed in Algebra as far as the progressions, and in Plane Trigonometry as far as the solution of triangles, with the use of logarithms and trigonometrical tables. In the Upper Division a more advanced course of lectures is given in Geometry, Plane Trigonometry, and Algebra, to which is added either the Conic Sections, treated geometrically, or Spherical Trigonometry.

The Council has sanctioned the employment of the Senior Mathematical Scholar in giving a portion of the instruction of the Lower Division. This arrangement, which it affords a greater number of hours to the Lower Division, enables the Professor of Mathematics to give more attention to the Upper Division, and has been found to work very satisfactorily.

In the Second Year the subjects of Lecture are Analytical Geometry, the Differential and Integral Calculus, and the first three sections of the *Principia* of Newton.

In the Third Year an Honor Course is given, in which are taught the higher branches of the Calculus, Geometry of Three Dimensions, and Differential Equations.

NATURAL PHILOSOPHY—Professor, *Joseph David Everett,* M.A., D.C.L.

The Classes in this Department are arranged under the three heads of Experimental Physics, Mathematical Physics, and Natural Philosophy Applied.

All Students in the Faculty of Arts in their Second Year attend the Classes of Experimental and Mathematical Physics. Engineering Students attend the Class of Experimental Physics in their First Year, the Class of Mathematical Physics in their Second Year, and the Class of Natural Philosophy Applied in their Third year. Medical Students attend the Class of Experimental Physics only.

In all these Classes the teaching is by prelection interspersed with oral examination.

The subjects treated under the head of Experimental Physics include—Properties of Matter, Mechanical Powers, the Elements of Hydrostatics and Hydraulics, Heat, Light, Sound, Electricity, and Magnetism; the leading principles in these several departments being broadly laid down and copiously illustrated by experiments.

The Course of Mathematical Physics includes a rigorous demonstration of the principal theorems in Statics and Kinetics, an explanation of the leading principles of Astronomy, Geometrical Optics, and the Mathematical treatment of numerous questions connected with the subjects of the Experimental course.

In the Class of Natural Philosophy Applied, the subjects include a more advanced course of Statics, Kinetics, involving application of the Differential and Integral Calculus, and illustrated by practical examples, Kinematics, including the principles of Mechanism, the relations of Stresses and Strains, Moduli of Elasticity and Rigidity, Work Done, Kinetic and Potential Energy, Elements of Thermodynamics.

In addition to the above-named Classes, there is an Honor Class, attended by Senior Students, in which the subjects prescribed for University Honors are studied.

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CHEMISTRY—*Professor, Thomas Andrews,* M.D., F.R.S., M.R.I.A.

In the Class of Chemistry the greater part of the Course is devoted to pure Chemistry; but the Elements of the Sciences of Heat and Electricity, particularly in their relations with Chemistry Proper, are also taught. The application of these sciences to the arts are particularly referred to; and it has been the constant endeavour of the Professor to communicate to the Students as precise and accurate information as possible on the subjects treated in his Lectures, and to train them to habits of careful observation and accurate thinking. With this view a weekly examination of the whole Class is held, at which the Students are subjected to a searching examination on the business of the preceding week; and further to encourage a taste for scientific inquiry, and also to train a certain number of practical chemists, a limited number of the Students are admitted, by examination, as working pupils into the chemical laboratory, where they have an opportunity of acquiring a knowledge of chemical analysis. This latter arrangement has now been in practice for several years, and has been attended with the best results.

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NATURAL HISTORY—*Professor, Ralph O. Cunningham,* M.D., M.D.

The Zoological Department of the Course occupies the First Term and greater part of the Second, and comprehends the Outlines of Anatomy and Physiology of animals, followed by Systematic Zoology, and remarks on the distribution of animals.

The Botanical part comprehends Vegetable Anatomy and Physiology, Systematic Botany, and distribution of vegetable forms. In addition to the Class Lectures, meetings are held in the Botanic Garden, and practical excursions made into the neighbouring country.

This Course comprehends chiefly Lectures on the structure and form of continents and islands; the distribution of mountain systems, rivers, and lakes; the ocean, its currents, temperature, &c.; the atmosphere, its currents, &c.; rain, snow, &c. The preceding subjects are considered in relation to the geographical distribution of animals and plants.

These different branches are illustrated by specimens, or drawings, or both, as the case may be.

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GEOLOGY AND MINERALOGY—*Professor, Robert O. Cunningham,* M.D., F.L.S.

The Courses consist of lectures, demonstrations, and examinations. The Geological Course embraces the general principles of the science, and a detailed investigation of the palæontological, lithological, and economic characters of all the formations. The Students are exercised in the practical uses of the necessary instruments, and in the construction of Geological maps and working sections.

The characteristic fossils of the different formations are rendered familiar by the exhibition of specimens and models, and an excellent series of drawings. Drawings are also used for the illustration of the underground workings of mines of copper, coal, &c.

In the Mineralogical Course the Students are instructed in the most modern crystallography by models, and exercised with the reflecting goniometer. The electro-chemical classification of minerals is then explained, and an extensive suite of minerals in the Museum is arranged on that system, for the instruction of the Students.

Once a week examinations are held, and additional explanations given of the subjects of the preceding lectures.

## LOGIC AND METAPHYSICS—*Professor, John Park, M.A.*

### LOGIC.

This class meets at 2 P.M., on Tuesdays, Wednesdays, Thursdays, and Fridays, during the First, and part of the Second Term of the Session.

The business of the class is conducted by lectures on—1st. The laws of Pure or Formal Thought. 2nd. The laws of Thought as directed to particular classes of objects, and as dependent to some extent on the special nature of these objects; by examinations on the lectures and on Whately's "Logic," and by the criticism of Essays on Logical subjects.

Students are recommended to read Morell's "Handbook of Logic," and Bacon's "Novum Organum," Book I., before entering the class.

### METAPHYSICS.

This class meets at noon, on Tuesdays, Wednesdays, Thursdays, and Fridays, during the First and Second Terms of the Session.

The business of this class is conducted by lectures on—1st. Psychology, or the science which examines the facts and the conditions of the phenomena of the human mind; 2nd, 2nd, Metaphysics Proper, or the science which investigates the Nature of Truth and of Existence; by examinations on the lectures, on Mansell's "Metaphysics," and on Henry's translation of "An Epitome of the History of Philosophy;" and by the criticism of Essays on Metaphysical subjects.

### HIGHER LOGIC.

This class meets three times a week, and is conducted by lectures, and a course of reading and examinations.

## CIVIL ENGINEERING—*Professor, James Thomson, M.A., C.E.*

The Courses of Instruction and practical Instruction given by the Professor of Civil Engineering are arranged to accord with the Ordinances of the Queen's University, which prescribe to candidates for the Diploma in Civil Engineering a Curriculum extending over three Sessions usually, but admitting of abbreviation to two Sessions in the case of students whose previous acquaintance with a sufficient group of the subjects prescribed for study in the first and second Sessions of the ordinary Course shall be deemed by the College Council satisfactory.

For the First Year Students the Professor gives a course of instruction, comprising lectures and oral examinations on the Principles of Geometrical Drawing, and the performance by the students of practical work under his direction. The lectures include the principles of descriptive geometry, orthographic and isometric projection, and linear perspective; and the practical work comprises the performance of examples in these subjects, and the execution of drawings in Mechanical Engineering, and occasionally also in Architecture and Civil Engineering. The class meets for two hours at a time on two days per week during the three Terms of the College Session.

For the Second Year Students two courses are conducted by the Professor of Engineering, of which one is a Lecture Course and the other a Practice Course. The Lecture Course comprises surveying, levelling, and plotting, with the theory

and use of the instruments required in surveying and levelling operations; mensuration of earth-works for railways; setting out works on the ground, including ranging of railway curves, and setting out breadths of cuttings and embankments, and ranging tunnels, &c. The Course also comprises usually some of the following subjects:—revision and further prosecution of descriptive geometry, and of perspective, and other subjects of geometrical drawing; designing and construction of oblique bridges; properties and qualities of materials used in construction, and modes of procuring them; and an introduction to architecture as a fine art.

In the Practice Course of the Second Year the Students are engaged in the performance of office and field work, under the instruction and direction of the Professor; and the business includes surveying, levelling, drawing, mapping, and the computation of areas of lands, and other engineering calculations. Excursions are also made occasionally during the Session to visit Engineering works.

For the Third Year Students there are (as for those of the Second Year), two Courses conducted by the Professor, one a Lecture Course, and the other a Practice Course. The Lecture Course comprises the further treatment of some of the subjects proposed to be entered on in the Second Year, and most of the following subjects:—foundations, cofferdams, bridges, tunnels, roads, and railways; specifications for engineering contracts; water-works for supplying towns; science of the flow of water in orifices, pipes, and canals; drainage of fens by gravitation, and by steam-power and other mechanical means; regulation and improvement of rivers; science of the strength of materials and structures; ventilation of dwelling-houses, public buildings, and mines; processes and mechanisms used in foundries and engineering workshops.

The Practice Course includes office work, field work, and engineering excursions.

## ANATOMY AND PHYSIOLOGY.—*Professor, Peter Redfern, M.D. Lond., F.R.C.S.*

The Department of Anatomy and Physiology comprises two distinct Courses of Lectures—one on Anatomy and Physiology, the other on Descriptive and Surgical Anatomy, and also the teaching of Anatomy by Dissections throughout the day.

The Course of Anatomy and Physiology includes about 144 meetings, each of an hour's duration, held on the first five days of each week from November to April inclusive. These meetings are for lectures and occasional examinations on the subjects previously considered in the lectures. The lectures include a complete course of the Anatomy and Physiology of the general textures of the body, including the blood, chyle, &c., and a systematic account of the whole of the viscera, instead of as they are associated in groups for the several purposes of digestion, circulation, respiration, urination, innervation, and generation; also the organs of sense. In treating of every part or organ its healthy state is shown by recent dissections and by preparations from the Museum illustrating it in man and animals, its diseased states and actions being referred to at the same time and contrasted with the healthy ones. The textures not visible to the naked eye are shown under a series of achromatic microscopes, so that during the Course every student in the class has an opportunity of judging for himself of the true characters of each part, and, by becoming familiarized with these, of recognising each when represented in drawings.

The Course of Practical Anatomy and Anatomical Demonstrations includes:—

1st. Dissections carried on throughout the day under the immediate superintendence of the Professor of Anatomy and Physiology, and the Demonstrator. Each student is required to be steadily engaged in dissection during the whole Session. For this purpose the supply of subjects is regular and abundant, and thus affords the surest foundation for efficient medical teaching.

2nd. This Course includes the Anatomical Demonstrations, which consist of a complete Course of Descriptive and Surgical Anatomy, commencing with the anatomy of the skeleton and bones, and including the anatomy of the limbs and other parts, excluding that of the viscera and the physiology treated of in the Course of Anatomy and Physiology. The demonstrations are given on each of the first five days of the week, and are about 117 in number in each Session.

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Digest
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PRACTICE OF MEDICINE—*Professor, James Cuming, M.D.*

The class meets four times each week, from the first week of November to the last of the following April.

An examination is held usually once a fortnight. The Course embraces the principles of Inflammation, Fevers, the diseases, organic and functional, of the viscera of the three great cavities of the human body. In treating of individual diseases, their pathology, semeiology, ætiology, and treatment, are the subjects chiefly dwelt on. Wherever it is possible, pathology is illustrated by the preparations afforded by our Museum, by drawings and plates, or by recent specimens. It may be added that the Professor's present connexion with the Belfast General Hospital adds greatly to the means of making his Course more useful and interesting to students.

THEORY AND PRACTICE OF SURGERY—*Professor, Alexander Gordon, M.D.*

Four Lectures are delivered weekly during the Medical Session. An examination is held each day on the subject of the preceding day's Lecture. Each Course comprises the following subjects :—

Inflammation,
Suppuration,
Mortification,
Erysipelas,
Burns,
Ulcers,
Wounds,
Hæmorrhage,
Diseases of the Arteries,
　　,,　　　Veins,
Fractures of Trunk and Extremities,
　　,,　　　Cranium, Injuries of the Brain and Scalp,
Dislocations,
Diseases of the Joints,
Diseases of the Bursæ,
　　,,　　Bone, benign and malignant,
　　,,　　the Jaws and Mouth,
　　,,　　the Fingers and Toes,
　　,,　　Female Breast,
　　,,　　Anus and Rectum,
　　,,　　Testis,
　　,,　　Hernia,
　　,,　　Proctasc,
　　,,　　Bladder,
　　,,　　Eyes,
　　,,　　Larynx,
Syphilis,
Gonorrhœa,
Stricture.

All the capital and minor operations are performed on the dead subject. The Professor delivers a separate Course of twenty-five Lectures on Operative Surgery.

MATERIA MEDICA—*Professor, James Seaton Reid, M.D.*

This Course includes—

1st. General Pharmacology, or the modes in which medicines act upon the living organism in a state of health.

2nd. Therapeutics, or the modes in which medicines act as curative agents.

3rd. Pharmacy.

4th. Dietetics, a review of the different kinds of food used in health and in disease.

5th. Special Pharmacology, or the history, composition, uses, and modes of administering medicinal agents for the cure of disease.

The Class meets four times each week. An examination is held once every week.

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MIDWIFERY—*Professor, Robert F. Dill, M.D.*

Lectures four times a week during the six winter months consist of following subjects :—

Anatomy of the pelvis, so much as is required for midwifery. Its measurement and pelvimeters.

Contents of the pelvis. The functions of the uterus in its virgin state.

Conception—length of gestation—changes of the uterus and its appendages during gestation.

Growth of child from its earliest seen form until its full parasitic size.

Graafian vesicle and corpus luteum. Fœtus, its circulation, signs of maturity, weight, and length.

Plural births.

Proportion of births and deaths of males to females.

Superfœtation.

Signs of pregnancy.

Signs of approaching labour.

Natural labour, its progress; also the positions and progress of child till its separation from its mother.

Management of natural labour, including the arrangement of the bed and bed-room; and the proper dress and posture of the patient.

Tedious labour, its causes and treatment.

Labour requiring the use of instruments; their application taught on models in the class.

Cæsarean section and Sigaultean operation—how to prevent the fœtus from getting large in utero.

Premature labour—how to bring it on, and when it is necessary to do so.

Cross-births and their treatment.

Abortion—how to prevent it.

Extra uterine fœtations—how they occur, and their treatment.

Management of women after delivery, and treatment of such accidents and diseases as occur at this period.

Management of children after birth, washing, dressing, food, &c., and the choice of a wet-nurse, and treatment of such accidents as take place at this period, or soon after.

Practical midwifery taught by pupils attending patients in their own houses and in the Lying-in hospital, where Clinical Lectures are given.

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### MEDICAL JURISPRUDENCE—*Professor, Dr. Hodges.*

The Lectures in this Course are delivered twice weekly during six months. They include an account of the history and chemical investigation of poisons, and of the various subjects respecting which the evidence and assistance of Medical Practitioners may be required in Courts of Law. Experimental illustrations of the methods to be pursued in medico-legal inquiries are given, and frequent examinations held to test the progress of Students. No salary has been allocated to the Teacher of this department, and the duties, at the request of the Council, have, since the opening of the College, been performed by Dr. Hodges.

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### ENGLISH LAW—*Professor, Echlin Molyneux, Q.C.*

The Professor of English Law, in conducting his department, has constantly kept in view the object of the Select Committee of the House of Commons in recommending the foundation of Chairs in Law in connexion with the Queen's Colleges, which, as they stated in their Report on Legal Education, was not merely to prepare Candidates for the Bar, and for the profession of Attorney and Solicitor, but to raise the standard of legal attainments amongst local practitioners, and especially to provide opportunities of legal education to qualify persons engaged to fill administrative situations not strictly legal—a policy which has

been since followed up by the Legislature conferring privileges, by way of inducement, on Candidates for the profession of Attorney and Solicitor, who shall avail themselves of these Schools of Law.

The Course of the *First* year in this department comprehends the elements of real and personal property, with the principles of conveyancing; that of the *Second* consists of an introduction to the principles and practice of Courts of Equity and the law of Bankruptcy; the *Third* Course includes the common law as incident to contracts, the nature and form of remedies by civil action, and an outline of criminal law, theoretical and administrative, which last completes the Curriculum of instruction required for the attainment of the Diploma of Elementary Law in the Queen's University. The subjects prescribed for Students of the *Fourth* year to qualify them for the Degree of LL.B. embrace a more extended and detailed course of the subjects already enumerated, including the law of wills, powers, evidence, and procedure.

The Lectures are made auxiliary to the contemporaneous studies directed, and are accompanied by interrogation, independent of the General Examinations and that for Honors. Such books, cases, and decisions, and portions of treatises are pointed out for reading as are considered by the Professor most useful in elucidating a branch of learning which is scarcely furnished with books exclusively intended for instruction; and no efforts have been spared to point out the peculiarities of the law in Ireland, whether proceeding from statutes or inherent diversity of practice, or to direct attention to the recent changes which have been introduced into the course of procedure.

From the first opening of the College to the present time the successive classes have spontaneously applied themselves with assiduity and perseverance to the various subjects of legal instruction, and several Non-Matriculated Students have from time to time availed themselves of the privilege afforded by the College Ordinances of attending detached Courses of the Lectures on selected subjects.

Under these circumstances, the Professor is gratified at being able to give the assurance that the Faculty of Law has fully realized the objects of its founders, and that a further extension of its public benefits would come upon the adoption by Government of the suggestion made by the same Committee of the House of Commons that a preference should be given to candidates for situations in the Civil Service, not of a purely legal nature, who could produce testimonials of legal attainments from these institutions—a rule which would fully accord with the principle laid down in a recent report of another Committee in relation to the Civil Service.

## JURISPRUDENCE AND POLITICAL ECONOMY—*Professor, T. E. Cliffe Leslie, LL.B.*

The subjects embraced in the Course of Lectures on *Jurisprudence* are according to the regulations of this College, (1) The Elements of Jurisprudence, (2) Civil Law, (3) Constitutional Law, (4) Colonial and International Law.

In the treatment of these subjects both the *Historical* and *Philosophical* Methods are followed in the Lectures of the Professor. The Historical Method, for example, is applied in tracing the principal changes through which the laws of England have passed, the assignable causes of such changes, and the degree and manner in which, in comparison with the laws of Continental Europe, the laws of this kingdom have been affected by contact with the principles of Roman legislation. The method of Philosophical Analysis, on the other hand, is applied in investigating the doctrines of the foundation and classification of rights, the several parts and legitimate form of a complete code, the relation of Scientific Jurisprudence to other departments of Social Philosophy, and the means of improving the state of Positive Law as deducible from such considerations.

The subjects which a Course of Lectures on *Political Economy* must embrace are fewer and more definite than those classed under the less advanced and more complicated Science of Jurisprudence. It is the Professor's endeavour to illustrate the principles of Economic Science by the help of those practical applications which will be most interesting and useful in a large commercial town.

# APPENDIX No. 8.

GENERAL CLASS EXAMINATION AT THE END OF THE SESSION.

## FIRST YEAR STUDENTS.

THE ENGLISH LANGUAGE.—*Examiner,* Professor Yonge.

### ESSAY.

THE ADVANTAGE TO MEN OF ALL PROFESSIONS OF A TASTE FOR, AND AN
ACQUAINTANCE WITH, GENERAL LITERATURE.

### QUESTIONS.

1. Trace the origin of the English language, and state when it finally arrived at the stage known as modern English.

2. What is the character of the changes which, in process of time, usually take place in languages? Exemplify your statement by instances drawn from any language.

3. Dr. Latham raises the question, how far English nouns and verbs can be said to be inflected. Give a brief account of his arguments and conclusions on this subject.

4. What changes take place in the cases, numbers, persons, degrees, tenses, &c., of nouns and verbs? Are either nouns or verbs divided into classes according to the differences between the changes which they undergo?

5. What are concords in grammar?

6. In compounded words, which is the portion which qualifies or defines the other? Give instances.

7. Is composition (in compounded words) the mere union of two or more words without alteration; or, if there be any change, what must be the character of such changes?

8. State the distinctions which Dr. Latham draws between the Etymologist and the Metaphysician, as far as they are employed in the analysis of language.

9. What is the office of conjunctions? Explain their construction, giving examples, and complete the following sentences:—

*I do this that..........*
*I said this that..........*
*I will go that...........*
*I could wish that.........*
*I could have wished that........*

10. Does the English language supply instances of any part of a verb being used as a noun substantive? If it does, compare any similar usage which you may have noticed in other languages.

## SECOND YEAR STUDENTS.

LOGIC AND METAPHYSICS.—*Examiner,* Professor Park.

### LOGIC.

1. Define Logic. Mention and criticise the definitions of Kant, Sir Wm. Hamilton, and Mr. J. S. Mill.

Explain—" If any general theory of the sufficiency of evidence, and the legitimacy of generalization is possible, this must be logic—*car il l'explie*, and anything else called by the name can only be ancillary to it."

2. What are, in the opinion of Dr. M'Cosh, the processes essential to Generalization?

Examine one of the following statements:—" Generalization is, indeed, dependent on abstraction, which it supposes, but abstraction does not involve Generalization." "Concepts have not a potential universality, but an universal potentiality."

3. " Logical Definition proposes to render the characters contained in an object *clear*. Logical Division proposes to render the characters contained under an object *distinct and exhaustive*." Write a short explanatory note on this passage, and state the rules of Logical Division.

4. Define the symbols, A, E, U, =, and point out the terms in the following propositions :—

"Not to be corrupted is the shame."

"To be, or not to be; that is the question."

Interpret the assertion, "man is mortal," in comprehension and in extension (stating what the copula means in each case), and give its converse and its contradictory.

5. Does Sir W. Hamilton admit that "all *negative* propositions (and no affirmative) distribute the predicate"? Show that the predicate must be distributed in the case of negatives.

6. Is I E O an admissible mode? Enumerate the modes and figures in which the middle term may be twice distributed.

7. What is the undigured syllogism? What is, in Dr. M'Cosh's opinion, its *rationale*?

8. Prove that the major premiss must be universal in the 1st and in the 2nd figure; that in the 1st and in the 3rd figure the minor premiss must be affirmative; and that A can be the conclusion in the 1st figure only.

9. Show that we may consider every conditional proposition as a universal affirmative categorical proposition, and that its appropriate symbol is in some cases U.

10. Reduce a Baroko to a Barbara; reduce a Disjunctive Syllogism to a Conditional, and that to a Categorical.

11. Define the Dilemma and the Sorites. Show that in the ordinary Sorites, there can be but one particular premiss, and but one negative premiss.

12. What is the distinction between Formal Logic and Material Logic? What are the most important questions discussed in the latter?

13. What is the exact meaning of the assertion, that A is the cause of B? Enunciate the canon of Concomitant Variations. State the respective advantages of Experiment and Observation.

14. Explain the following phrases :—" Consilience of Inductions," Mental Analysis," "Explanation," "Hypothetical Method," " Kinds," " Empiric Law."

15. When may we assert that a Co-existence is not casual? What are the principles by which we test Classifications?

16. State the various meanings of the term "Induction." Lord Bacon is guilty of some oversights in regard to Induction ?

17. What is Circumstantial Evidence? What is a Self-informative Chain of Argument?

18. Suppose that two witnesses, whose veracity is respectively $\frac{7}{10}$

and $\frac{11}{12}$ combine in telling the same story, what is the chance that the event in question really happened?

Suppose that A. B. (whose veracity is $\frac{9}{10}$) asserts that C. D. (whose veracity is $\frac{11}{12}$) told him that E. F. died yesterday, in what degree is the death of E. F. probable?

State the principles on which your calculation is based.

19. Point out any errors you notice here—"A triangle is one-half of a parallelogram." "If all equilateral triangles are equiangular, all equiangular triangles must be equilateral." "2 and 3 are 5;—2 and 3 are odd and even, ∴ 5 is odd and even." "As with the individual, so with the nation—the more gold, the more wealth; a wise statesman should, therefore, discourage the export of gold." "You will find this man 'not guilty'; he has already suffered much, and his father was a faithful citizen." "Nature abhors a vacuum; and, therefore, water rises in our pumps."

20. The human brain greatly exceeds the animal brain; and the most advanced races of men have the largest brains. The brain of Cuvier weighed 64 oz.; the average brain weighs 48 oz.; the brain of an idiot is sometimes only 22 oz. A blow on the head may occasion loss of memory; undue mental action injures the brain; insanity is attended by brain disease. From such facts we infer that the brain is the chief organ of mind.

By what "*methods*" do we make this inference?

21. What are the advantages, and what the disadvantages, incidental to the use of language as an instrument of thought?

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## Natural History.—*Examiner,* Dr. Wyville Thomson.

### GEOLOGY.

1. Give a sketch of the origin and mode of formation of a sandstone rock.

2. Describe a metamorphic rock, and state what you know with reference to the phenomena of metamorphism.

3. Give a general outline of the distribution of the trias system, indicate its stratigraphical and palæontological relations, and state the chief economic products which are derived from it.

4. Refer the following genera to their several places in the zoological scale, and state the formations in which they are characteristic fossils—orthoceras, schizodus, graptolites, trinucleus, turrilites, and osteolepis.

5. Give an outline of the phenomena of an active volcano, give a classification of its principal products, and state generally their composition. Sketch the general distribution of volcanic action on the surface of the earth.

6. Name some of the building stones in use, and state from what formations they are derived.

7. What are the subdivisions of the silurian system? Name one or two characteristic fossils of each.

## ZOOLOGY.

1. Explain in detail the characters upon which mammalia are divided into placentalia and implacentalia, and the latter into ornithodelphia and didelphia.

2. Explain in detail the characters upon which vertebrate animals are divided into two great groups, allantoid and anallantoid. Describe the position, structure, and mode of development of the allantois.

3. Describe the course of the circulation in birds, reptiles, and fishes.

4. What are the principal characters which birds and reptiles have in common, and which are absent in mammalia?

5. Describe the structure and mode of development of any mammalian tooth.

6. Describe the dentition of the crocodile, and contrast it with that of the porpoise and with that of the sloth.

7. What is the structure and position of the gills in fishes? Give any modifications in the structure, position, or attachment, of the gills in any orders of fishes.

8. Describe any peculiarities in the structure of the skeleton and in the dentition of the armadillo and of the sloth.

9. What organs specially distinguish the echinodermata from the other invertebrates? Describe these organs in detail.

10. What is the meaning of the terms "homonomous" and "heteronomous," as applied to the annuloida and the arthropoda respectively?

ENGLISH LAW.—*Examiner, Professor Molyneux.*

### SECOND YEAR STUDENTS.

#### EQUITY AND BANKRUPTCY.

1. In the event of a person electing to take against a will, how is the compensation to be computed?

2. In the application of the equitable rule as to ademption of legacies; state on which side lies the presumption, where the legatees are children or strangers respectively?

3. What is equitable waste?

4. In what case will the Court of Chancery decree a dissolution of partnership?

5. Where business is carried on by a firm, and each member of it carries on other business separately, distinct adjudications of bankruptcy pronounced against the firm collectively, and each member of it individually, in what way will the several funds realized in the several bankruptcies be administered among the creditors?

6. What classes of gifts inter vivos will courts of equity refuse to enforce, even where they are founded on meritorious consideration?

7. What is the *modus operandi* of a suit to perpetuate testimony? And what is the condition under which testimony, so perpetuated, may be afterwards used?

8. What are the two leading subjects of inquiry which a purchaser under the Court of Chancery must pursue for his protection, and from which a purchaser under the Landed Estates Court is exempt?

9. What additional circumstance is necessary to convert "keeping house," &c., into acts of bankruptcy?

10. Under what circumstances is a *bonâ fide* purchase valid, notwithstanding the purchaser had notice of a previous act of bankruptcy?

11. In what respect do judgment mortgages and mortgages by deed, differ in regard of priority over other creditors as having specific liens in bankruptcy?

12. What class of execution creditors are deprived of priority, even when levied after an act of bankruptcy and without notice of it?

13. Under what circumstances does the goods of third persons pass to the assignees of a bankrupt for the benefit of his creditors?

14. In what particular does the proceeding on petition for an adjudication of bankruptcy differ from that by which an adjudication is obtained in a plenary suit in Chancery?

15. In administration of assets, what class of creditors gain by the assets being purely equitable? What maxim of equity is applied in such cases?

16. How is the order of administration of real and personal assets affected by a charge of the legatees on the real estate and the exoneration of the personal estate? State the different effects of these testamentary directions.

17. To what extent does the Statute of Limitations (3 & 4 Wm. IV.), affect remedies in cases of trust?

18. On what principle are mortgagees, who have entered into possession of the mortgaged premises, required to account in mortgage causes?

19. What is the present structure of the Court of Chancery, with respect to its judges and officers, and the general conduct of suits?

20. What are the several different modes of making profits in the Court of Chancery, as prescribed by the recent Act of Parliament for its regulation?

21. On what principle of equity does the doctrine of graft rest, where new leases are taken by persons having an interest in a former demise of the same land?

22. In what way can liens for the purchase money of an estate be made practically available to the vendor for obtaining judgment?

23. How is the operation of the Irish Registry Acts affected by notice? And what is the effect of notice in the case of a purchase for valuable consideration subsequent to a voluntary conveyance?

24. Upon what general principle is it that Courts of Equity relieved tenants against right of re-entry on non-payment of rent, by decreeing redemption on payment of the rent, a relief now qualified by the Ejectment Acts?

25. What statutable protection has been afforded to executors in the performance of their duties by the last "Trustee Relief Act"?

26. When a person takes an assignment of a mortgage, why is it usual and expedient that the mortgagor shall be a party to the transaction?

27. In what instance will Courts of Equity decree specific performance of a contract relating to lands, although the Statute of Frauds has not been complied with?

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## FIRST YEAR STUDENTS.

### LAW OF PROPERTY AND CONVEYANCING.

1. A. a widow, dies seised of an estate in fee simple, having devised it to her eldest son, B. ; B. dies, having entered into possession ; whether is the heir to be sought in the stock ex-parte paterna or ex-parte materna, if A.'s death occurred *before* the Inheritance Act, (3 & 4 Will. 4.) came into operation ; and in what stock is the heir to be sought if A. had died *after* the Act came into operation ?

State the reason of the answer.

2. A. dies, leaving B, executor of his will, B. dies intestate, C. takes

out administration to B, and gets possession of the unadministered assets of A.; D. takes out administration *de bonis non* to A., but has not got possession of any of A.'s assets. A creditor of A. desires to recover the amount of his debt. Against whom is he to bring his action? And state for what reason is such person to be selected.

3. To what class of legal interests in real property were conveyances by grant exclusively appropriate before the 7 & 8 Vict.?

4. What are the several modes and occasions of transmission of real estate at present known to our law?

5. In what instance is the Sovereign entitled to escheated land?

6. State the several instances of possession of land which have been rendered *adverse* by the Statute of Limitations, (3 & 4 Will. 4,) but which had not been so deemed by our laws prior to that Act.

7. What is the general tenure by which land is now held? and what are the principal features of that tenure, as distinguished from the abolished military tenures?

8. How does a term attendant on the inheritance arise? What are its uses in the devolution of title?

9. In what way has the Irish registry of deeds contributed to the registration of title?

10. What is a reversionary lease?

11. What are the nature and incidents of a tenancy from year to year?

12. Blackacre conveyed to A. B. and his heirs, to the use of C. D. and his heirs. Whiteacre conveyed to A. B. and his heirs, to the use of A. B. and his heirs, to the use of C. D. and his heirs. C. D. sells both estates. Who are the proper and necessary parties to the deed of conveyance to the purchaser in each case?

13. When the Act for recording titles (28 & 29 Vict. ch. 88) is put into operation with respect to estates in land, how will the mode of conveying such estates be thenceforward affected by the Statute?

14. In what respect is a judgment mortgage an inferior security to an ordinary mortgage, so far as the Registry Acts operate?

15. What are the periods for the recovery of *arrears* of rent, in the cases of *rent reserved by lease* or *rentcharge respectively*?

16. Where an article of personal property is lent; in whom are the right of property and right of possession respectively vested? What act of the lender will it be necessary to prove to sustain an action on his part for recovery of the article, or damages for its detention?

17. What person formed the root of descent *prior to* the Inheritance Act (3 & 4 Will. 4); and what person *since* that Act?

18. In the succession to personal property by the *issue* of the deceased owner, where do the rules of taking by representation and taking per capita respectively apply? And what is this limit to the application of the rule of representation in the case of *collaterals*?

19. A. dies, having made his will, and appointed an executor, who proves his will. The executor dies intestate. How can A. be represented as to his assets unadministered by B.?

20. Limitation to an unborn tenant in tail under a marriage settlement. In what period of time can such an estate be rendered absolute?

21. Why did the courts find it necessary to establish an artificial rule against perpetuities, to secure the absolute vesting of an estate within given limits, in the case of executory devises, and shifting and springing uses?

22. By what contrivance of conveyancers was livery of seisin dispensed with?

23. In making out title to lands in Ireland, why is it necessary to show

the origin of the title from the Crown, at whatever distance of time the *Appendix,* grant may have been made ?          *No. 3.*

24. What are the facilities in point of conveyancing, and exceptional *General* to its ordinary principles, provided by the "Leasehold Conversion Act" *Class Ex-* (12 & 13 Vict. ch. 105) to vest an estate in fee in the tenant, and what *amination.* was the nature of the tenure which the Statute was enacted to convert ?

## JURISPRUDENCE.—*Examiner,* Professor Leslie.

1. State and criticise Sir W. Erle's theory of the origin and growth of the common law of England.

2. Explain historically the distinction between law and equity.

3. Explain historically the distinction between the law of real and of personal property.

4. Explain and exemplify the following propositions :—

   (1.) Law necessarily engages a large part of the intellect of a nation emerging from barbarism.

   (2.) Law becomes one of the main obstacles to the progress of a nation.

   (3.) Changes in law are made for a long time covertly and in disguise.

   (4.) When a general tendency of legal changes in a particular direction, is visible throughout the history of a progressive society, that tendency is one towards progress, although the means employed may even be obstructive of progress.

5. State the principles which ought to determine the number and situation of courts of justice.

6. Explain the meaning of codification, and point out the changes in substance necessary to the codification of English law.

7. Explain the object and method of Mr. Maine's treatise on Ancient Law.

8. Explain the origin of the Roman *jus gentium.*

9. Explain the connexion on the one hand, and the fundamental distinction on the other, between the *jus gentium* and modern international law.

10. Explain the origin of the theory of a law of nature, and show its fallacy.

## JURISPRUDENCE AND CIVIL LAW.

1. Explain the causes of the superiority of Rome over Greece in jurisprudence.

2. Explain the division of law into the law of persons, of things, and of actions.

3. Point out the fallacy of the Roman doctrine respecting the source of the authority of customary law.

4. Sketch the principal features of the historical connexion between English and Roman law.

5. Point out several tendencies visible in the growth of English law, and show their connexion.

6. State Professor Arnold's view of the causes which made Roman law what it was ; and show how this is reconcilable with Mr. Maine's doctrine respecting early Roman law.

7. State Mr. Maine's account of the origin of the law of primogeniture in the feudal ages.

8. There seems to have been one solemn ceremonial at first for all legal transactions at Rome?

9. "All the known collections of ancient law are characterized by a feature which broadly distinguishes them from systems of mature jurisprudence." Explain this.

## THIRD YEAR ARTS STUDENTS.

### POLITICAL ECONOMY.

1. When the price of an article rises in consequence of the destruction of a large part of the supply, how much of the price represents absolute loss to the country, and what change in the distribution of wealth is shown in the remainder?

2. State the conditions essential to equalize the rate of profits in different trades.

3. What effect would the loss of a great part of the metallic currency of a country have on its export and import trade?

4. What are the causes which determine the natural amount of the currency of a country?

5. Assuming competition to be perfectly free and well informed, what principle determines the incidence of a tax, or any other burden?

6. On what causes does it depend whether, in a country where a tithe is exacted, rent or tithe increases the faster?

7. Supposing a country to be all in cultivation, and agricultural skill to be stationary, show that it is not necessarily true that every additional quantity of agricultural produce is raised at additional cost.

8. The income tax on farmers' profits is calculated on the assumption that the profit is equal to half the rent. Show the absurdity of that assumption.

9. What effect has a fall in the value of the precious metals on watches, and why?

10. Explain the causes which determine the real income of a labourer, and show the error of the term "real wages," as applied to the real incomes of labourers in general, in the present state of society. To what state of society is the term real wages properly applicable?

## THIRD YEAR STUDENTS.

HISTORY AND ENGLISH LITERATURE.—*Examiner, Professor Yonge.*

ESSAY.

THE ADVANTAGES OF A KNOWLEDGE OF THE CLASSICAL LANGUAGES TO A STUDENT OF ENGLISH, OR GENERALLY OF MODERN LITERATURE.

### MODERN HISTORY.

1. Give an account of the brief provisions of Magna Charta. Was it altogether a new enactment? Was it uniformly, or in any degree acknowledged by subsequent kings? What similar laws or enactments were established in the times of the Stuarts?

2. Between whom, and in what reign, are the battles of Dam, Falkirk, Sluys, Verneuil, Pinkey, Sedgmoor, La Hogue, Senef, Dettingen, Rosbach.

3. Who were the Prime Ministers of England and France between 1730–1740 ?  Compare their characters.

4. What was the Act of Settlement ?  Was there ever any period after its enactment when an attempt to repeal it was in contemplation ?

5. What were the circumstances which led to the American War ?  Mention some of its chief incidents.

6. What legislation, with respect to Ireland, took place between the years 1775–1805 ?

7. What, in French History, was the League ?  When was it formed ?  When did it expire ?  Who were the chief actors in it ?

8. Describe the Rebellion of the Fronde.

9. What were the causes, and the chief incidents, and who were the most celebrated commanders in the War of the Succession ?

10. What were the chief circumstances which, in the beginning of the reign of George I., made the Governments of England and France mutually desirous of an alliance ?  Was any alliance established between them ?

### ENGLISH LITERATURE.

1. What period of English History may most fitly be called the Golden Age of English Literature ?  Mention the chief authors of that period : enlarging as you may be able or think fit, on their peculiar characteristics and excellences.

2. Give a brief sketch of the plot of Shakespeare's Richard III., (or Othello), and discuss how far Shakespeare adheres to historical truth in that and in his other historical plays.

3. Give some account of the life of Milton, and of Paradise Lost, embodying some of the comments of Macaulay and Addison.

4. Describe the style and distinguishing peculiarities (if any) of the prose of Addison, Johnson, Gibbon, and Macaulay, comparing them with the standard which you conceive to be the true criterion of excellence.

> 5.    The Goth, the Christian, Time, War, Flood, and Fire
> Have dealt upon the Seven-hilled City's pride ;
> She saw her glories star by star expire,
> And up the steep barbarian monarchs ride,
> Where the car climbed the Capitol. .
>
> *Childe Harold*, iv. 80.

Explain the historical allusions in this passage.

6. Give a brief sketch of the History of Comedy in England.

> 7.    Ye Towers of Julius, London's lasting shame,
> With many a foul and midnight murder fed,
> Revere his consort's faith, his father's fame,
> And spare the meek usurper's holy head.

From what poem are these lines taken ?  What do you know of the author ?  Who were the *usurper*, the *father*, and the *consort* here alluded to ?

8. In Burke's Reflections on the French Revolution, what are the comments which he makes on the composition of the States General ?  And to what particular events in the Rebellion against Charles I. does he compare some which he mentions as of recent occurrence in France ?

9. Who have been the greatest orators in the three kingdoms? Have we equal facilities for estimating the eloquence of those who flourished before the accession of George III. and those who have been famous since that date; and if not, how do you account for our not having such equal facilities?

LOGIC AND METAPHYSICS.—*Examiner, Professor Park.*

METAPHYSICS.

1. Describe very briefly the nerve centres, *or the nerve-cords.* State the functions of the latter.

*2. What is the object immediately perceived by sight, taste, or touch?

3. Show the important psychological meaning of the proposition,— "All sensible cognition is, in a certain acceptation, reduced to touch."

4. Explain and examine *one* of the following assertions :—"Matter may be defined a permanent possibility of sensation." "Resistance to the locomotive energy is the only mode of consciousness which directly tells us of the existence of an external world."

*5. Enumerate the leading theories of Perception. Define Natural Realism and Cosmothetic Idealism.

*6. On what grounds do some philosophers object to the term "Association of Ideas"? State the Primary laws of Association, and those of Preference.

*7. In what sense does Dr. M'Cosh use the term "Law of Repetition"? Explain—"Association is not bilateral." "Not only homogeneous modes of consciousness, but heterogeneous modes are mutually suggestive."

8. What is the proper object of self-consciousness? Refer to the views of Hume, Ferrier, M'Cosh.

9. What is meant by (*a*) the retentive power ; (*β*) the representative ; (*γ*) the recognitive?

10. What is an emotion? a desire? an appetite? State the conditions, or the consequences, of emotions in general, *or* of some one emotion, *ex. gr.,* the sublime or the painful.

*11. "Predication is limitation." "Every concept exhibits the form of unity." "Hobbes and Berkeley were Nominalists." Explain *one* of these propositions, or state the distinction between analytic and synthetic judgments.

12. Show that questions regarding the Ethical Standard are distinct from those as to the Moral Faculty. Illustrate your answer by reference to the views of such writers as Dean Mansel, Butler, J. S. Mill, and Hume.

13. What is meant by the Freedom of the Will, Philosophical Necessity, and Fatalism? *or,* How do Volitions direct the train of our ideas?

14. State the leading questions of Metaphysics, and classify the answers.

*15. What is the distinction between Personality and Personal Identity?

*1. Give the names (and the dates) of the chief works of *two* of the following philosophers—Locke, Berkeley, Kant, Reid, Hume, Comte, Butler, Descartes.

2. Sketch briefly, but distinctly, the opinions of *two* of the above-mentioned thinkers.

3. What is *substance*, according to Locke, Berkeley, Hume, Mansel?

*4. What is the doctrine of Pre-established Harmony?

*5. What is the difference between what, and the ideas, of Hume?

*5. What is the distinction between the primary and the secondary qualities of body? *or* the Kantian distinction between *noumena* and *phenomena*?

6. Write a short historical account of the doctrine of unconscious mental modifications. Enumerate as many of the arguments *pro* and *con* as you remember.

7. Interpret the proposition "This is right," according to the system of Butler, of Paley, of Bentham or J. S. Mill, or of Dr. M'Cosh.

8. State the exact theory of causation held by Dr. T. Brown, by Dr. Mansel, or by Mr. J. S. Mill.

9. State the principles on which Comte's classification of the sciences is based; *or*, sketch the reasoning by which Butler established the natural supremacy of conscience.

10. What are heteropathic states of mind? Criticise Mr. Mill's theory of heteropathic association, *or* of inseparable association; *or* enumerate and criticise as many theistic arguments as you remember.

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## ANATOMY AND PHYSIOLOGY.—*Examiner, Dr. Redfern.*

First Year Students are required to answer Questions 1, 2, 3, 4, 5; Second Year Students, Questions 3, 4, 5, 6, 7; and Third Year Students, Questions 5, 6, 7, 8, 9.)

1. Mention separately the physical and vital properties of the following substances:—tendon, muscle, nerve, and bone.

2. Describe the muscular coat of the stomach and of the small and large intestines.

3. Mention the quantity in 24 hours of each secretion poured into the alimentary canal, with the period of discharge of each, and the length of time during which it flows.

4. What are the chief and the assistant causes of the circulation of chyle and lymph?

5. Mention and describe those structures which are required in the fœtal and not in the adult circulation of the blood.

6. The thoracic cavity having been opened, describe the method of dissecting and exposing all the parts of the pericardium and heart.

7. Mention the parts of the male and female generative organs which correspond to each other; and also those which appear in both the sexes. State from what original structures each part is developed, and what the development teaches in regard to hermaphrodism.

8. Describe the development of the supra-renal capsules, and their connexions with nerves.

9. State what you know of the size of the following organs at different periods of intra and extra uterine life:—thyroid body, thymus gland, spleen, and supra-renal capsules.

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## PRACTICAL ANATOMY.—*Examiner, Dr. Redfern.*

[In addition to making a Dissection, First Year Students are required to answer Questions 1, 2, 3, 4;—Second Year Students, Questions 1, 2, 3, 4, 5;—and Third Year Students, Questions 4, 5, 6.]

1. Describe the differences between a metacarpal and a metatarsal bone; also those between a proximal and a middle phalangeal bone.

2. Describe accurately the movements at the temporo-maxillary articulation.

3. Mention the external rotator muscles of the thigh at the hip joint; and add in each case whatever other action each muscle possesses.

4. Describe the inguinal and the crural canal, their positions, extent, boundaries, and relations.

5. Mention the position and course in the abdomen of each branch of the lumbar plexus of nerves, as it may be exposed without the removal of the psoas muscle.

6. Describe the extent, course, and relations of the first stage of the right subclavian artery.

7. Describe the communications of the fifth pair of cranial nerves with other nerves.

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## MIDWIFERY AND DISEASES OF WOMEN AND CHILDREN.

### Examiner, Dr. R. F. Dill.

1. What are the principal diameters and measurements of an ordinary-sized female Pelvis?

2. Give a brief account of the general and special abnormal deviations of the Pelvis.

3. What are the morbid conditions and mechanical influences which produce pelvic deformities?

4. What are the peculiarities, and the pathology of the Pelvis of Negali?

5. By what means may a diagnosis be formed, during labour, of the amount of deformity in the Pelvis?

6. What are the different positions of breech presentations? Give the diagnosis, and state wherein the labour in breech presentations generally differs from that of vertex presentations.

7. Describe the operations, "Cæsarian Section," and "Induction of Premature Labour." State the circumstances arising in practice which would warrant you in performing these operations.

8. You are called to a case. You find violent uterine action existing, suddenly it ceases, and is followed with pain, restlessness, and some loss of blood. The head, if presenting, recedes, the pulse becomes feeble and rapid, the patient retches, and vomits, cold perspiration covers the body, hurried respiration also exists. Give your diagnosis and prognosis. What would be your treatment?

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## THEORY AND PRACTICE OF MEDICINE.— *Examiner, Dr. Cuming.*

### FIRST AND SECOND YEAR STUDENTS.

[Students of the Second Year are required to answer the first five questions only, those of the First Year only the last five.]

1. Give the diagnostic marks of the different affections of the Liver attended with enlargement of that viscus.

2. What are the *symptoms* of Aneurism of the Thoracic Aorta, and their value as indicating the seat of the Aneurism?

3. Give the characteristics of the cerebral respiration described by Graves, and the respiratory distress described by Cheyne. In what affections are they found?

4. How would you treat a case of Acute Morbus Brightii? Give the rationale of your treatment.

5. What are the symptoms of Gastric Ulcer, and how is it to be treated?

6. How is Cerebral Vomiting to be distinguished from that proceeding from Gastric Derangement?

7. What are the physical signs of Emphysema, and what are the indications of treatment?

8. What is meant by crisis, in Fever? What are the forms of crisis in Typhus?

## MEDICAL JURISPRUDENCE.—*Examiner,* Dr. HODGES.

1. State the smallest dose, in which the following substances act as poisons:—Tartar Emetic, Rennet, Arsenious Acid, Prussic Acid, Opium, Tincture of Aconite, Phosphorus, Cantharides.

2. What are the symptoms produced by a poisonous dose of Phosphorus?

3. Describe Stas' process for the separation of the Alkaloids from the contents of the stomach.

4. Give an account of the arrangements required for the Electrolytic separation of Arsenic.

5. Mention the signs of recent delivery after childbirth.

6. State the evidence required to establish " tenancy by courtesy."

7. What is the average size of the corpuscles of human blood?

8. Describe the processes required for the separation and detection of Copper in the Liver.

## MEDICAL STUDENTS.

### FRENCH.—*Examiner,* Professor MEISSNER.

*Translate into French:*—

I. Do you think she will write to her father after having written to yours?—Have you paid his servants and ours?—Is he more brave than we are?—Where is the black cow? It is in the meadow?—Have you crossed the iron bridge? No, I have crossed the wooden bridge.—Have you seen neither Robert nor Alfred?—He was a soldier.—*Havet.*

II.—It is said of Sir Robert Peel by a French statesman, that he had no foreign policy but peace and good-will among nations. The same thing may be said of Pitt during the first ten years of his power. He was remarkably free from the vice of diplomacy. He did not meddle except when he was called upon to do so, and then he quietly and with dignity maintained the honour of the nation. It is well for the nation, when the Chancellor of the Exchequer is the most powerful man in the government, because his ambition is opposed to war.—*Goldwin Smith.*

*Translate into English:*—

I. Le duc de Mayenne, chef des liqueurs, aimait beaucoup la bonne chère ; il passait à table tout le temps pendant lequel son infatigable rival, Henri IV, le laissait tranquille. Rarement il en sortait sans avoir la tête échauffée, et c'est dans ces moments heureux qu'il battait en idée Henri IV, qu'il le battait ensuite en réalité.

Le jour de la bataille d'Arques, il dîna copieusement comme à son ordinaire ; on lui avait servi un melon il et se excellent, disposait à le

manger, lorsqu'on vint l'avertir que la cavalerie d'Henri IV s'était imprudemment avancée dans un taillis, où elle serait surprise et écrasée s'il voulait en donner l'ordre ; que l'ordre des ligueurs, profitant de ce triomphe, acheté sans peine, pourrait sa jeter à l'improviste sur le camp ennemi, le forcer, et peut-être faire prisonnier Henri lui-même.

« Un moment, » dit Mayenne, « laissez-moi achever mon melon. »

Peu d'instants après, un officier survient et lui fait un rapport semblable au premier.    Même réponse :

« Laissez-moi achever mon melon. »

Enfin on lui annonce qu'on aperçoit l'armée ennemie et qu'il n'a plus que le temps de monter à cheval.

« J'ai fini ! » s'écria-t-il avec un air de satisfaction.   Il monte à cheval et est complètement battu : juste châtiment de son intempérance et de sa gourmandise.—*T. M. Barrau.*

II. Il est doux de raser en gondole la vague
Des lagunes, le soir, au bord de l'horizon.
Quand la lune élargit son disque pâle et vague
Et que du marinier l'écho rit la chanson.

Il est doux, quand on suit une route inégale
Dans l'été, vers midi, chargé d'un lourd fardeau,
Et qu'on entend chanter près de soi la cigale
De trouver un peu d'ombre avec un filet d'eau.

Il est doux, en hiver, lorsque la froide pluie
Bat la vitre, d'avoir auprès d'un feu flambant,
Un immense fauteuil gothique, où l'on appuie
Sa tête paresseuse en arrière tombant.

Il est doux de revoir avec ses tours minées
Le temple, ses clochers et ses blanches maisons,
Ses toits rouges et bleus, ses hautes cheminées,
La ville où l'on passa ses premières saisons.

                                    *Théophile Gautier.*

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GREEK.—*Examiner, Professor MacDouall.*

FIRST YEAR STUDENTS.

I.—All will translate these lines from the VIIIth Book of the *Ilias* :—

ἦτοι ὅ μὲν φαρέτρης ἐξείλετο πικρὸν ὀϊστὸν²
θῆκε δ᾽ ἐπὶ νευρῇ· τὸν δ᾽ αὖ κορυθαίολος¹³Ἕκτωρ
αὐερύοντα,¹ παρ᾽ ὦμον,—τῇ ῥα μάλιστα⁴
αὐχένα τε στῆθός τε, μάλιστα δὲ καίριόν⁵ ἐστιν,—
τῇ ῥ᾽ ἐπὶ οἷ μεμαῶτι βάλεν λίθῳ ἀκριόεντι⁴
ῥῆξε δὲ οἱ νευρὴν· νάρκησε δὲ χεὶρ ἐπὶ καρπῷ,
στῆ δὲ γνὺξ³ ἐριπών,¹ τόξον δέ οἱ ἔκπεσε¹ χειρός.
Αἴας δ᾽ οὐκ ἀμέλησε κασιγνήτοιο⁴ πεσόντος,
ἀλλὰ θέων¹ περίβη καί οἱ σάκος ἀμφεκάλυψεν·
τὸν μὲν ἔπειθ᾽ ὑποδύντε¹ δύω ἐρίηρες ἑταῖροι
νῆάς ἐπὶ γλαφυρὰς⁴ φερέτην¹ βαρέα⁴ στενάχοντα.
ἂψ δ᾽ αὖτις Τρώεσσιν ᾽Ολύμπιος ἐν μένος ὦρσεν.¹
εἰ δ᾽ ἰθὺς τάφροιο βαθείης ὦσαν¹³ ᾽Αχαιούς·

Ἕκτορ δ᾽ ἐν πρώτοισι κίε¹ σθένεϊ βλεμεαίνων,²
ὡς δ᾽ ὅτε τίς τε² κύων συὸς ἀγρίου ἠὲ λέοντος
ἅπτηται κατόπισθε—ποσὶν ταχέεσσι πεποιθὼς¹—
ἰσχία τ᾽ ἠδὲ γλουτοὺς τε, ἐλισσόμενόν τε δοκεύει,²
ὣς Ἕκτωρ ὥπαζε¹ κάρη² κομόωντας² Ἀχαιοὺς
αἰὲν ἀποκτείνων τὸν ὀπίστατον² οἱ δὲ φέβοντο.

Candidates for Honors will likewise translate the following lines:—

εἰ γὰρ ἐγὼ τάδε ᾔδε¹ ἐν φρεσὶ πευκαλίμησιν,²
εὖτέ² μιν² εἰς Ἀΐδαο² πυλάρταο² προσέπεμψεν¹
τὰ Ἐρίβλης¹ ἀξοντα σίνια στυγεροῦ² Ἀΐδαο,
οὐκ ἂν ὑπεξέφυγε Στυγὸς ὕδατος αἰπὰ² ῥέεθρα.
νῦν δ᾽ ἐμὲ μὲν στυγέει, Θέτιδος δ᾽ ἀγλαὸν βουλάς,
ἥ οἱ γούνατ᾽¹ ἔκυσσε² καὶ ἔλλαβε² χειρὶ γενείου,
λισσομένη² τιμῆσαι² Ἀχιλῆα πτολίπορθον.²
ἔσται μὴν ὅτ᾽ ἂν αὖτε φίλην Γλαυκώπα εἴπῃ.

II.—1. Every word to which the figure 1 is annexed is to be parsed fully and accurately, and every word to which the figure 2 is annexed is to be derived or decompounded. The Attic form is to be subjoined whenever it differs from the Homeric.

2. Account for the use of the genitive case in regard to κασιγνήτοιο, τάρφεος, συὸς, γενείου, εἰς Ἀΐδαο.

3. What do you remark in the modes of the verbs ἅπτηται and δοκεύει introduced by ὅτε?

4. Restore the letter *F* to every word in the passage where its presence is warranted by tradition or analogy or metre.

I.—All will translate the following iambics from the *Hippolytus* of EURIPIDES:—

ΤΡΟΦΟΣ.  οὐκ οἶδ᾽ ἐλέγχουσ᾽¹ οὐ γὰρ ἐννέπειν¹ θέλει.
ΧΟΡΟΣ.  οὐδ᾽ ἥτις ἀρχὴ τῶνδε πημάτων² φράσει.
    ΤΡ.  εἰς ταὐτόν² ἥκεις· πάντα γὰρ σιγᾷ τάδε.
    ΧΟ.  ὡς ἀσθενεῖ τε καὶ κατέξανται² δέμας.¹
    ΤΡ.  πῶς δ᾽ οὔ, τριταίαν γ᾽ οὖσ᾽ ἄσιτος ἡμέραν;
    ΧΟ.  πότερον ὑπ᾽ ἄτης ἢ θανεῖν² πειρωμένη;
    ΤΡ.  θανεῖν² ἀσιτεῖ² δ᾽ εἰς ἀπόστασιν² βίου.
    ΧΟ.  θαυμαστὸν εἶπας,² εἰ τάδ᾽ ἐξαρκεῖ² πόσει.
    ΤΡ.  κρύπτει γὰρ ἥδε νόσον καὶ γ᾽ οὔ φησιν νοσεῖν.
    ΧΟ.  ὁ δ᾽ εἰς πρόσωπον² οὐ τεκμαίρεται βλέπων;
    ΤΡ.  ἔκδημος² γὰρ τῆσδε τυγχάνει χθονός.
    ΧΟ.  σὺ δ᾽ οὐκ ἀνάγκην προσφέρεις πειρωμένη
         νόσον πυθέσθαι² τῆσδε καὶ πλάνον² φρενός;
    ΤΡ.  εἰς πᾶν ἀφῖγμαι² κοὐδέν² εἴργασμαι² πλέον·¹
         οὐ μὴν ἀνήσω² γ᾽ οὐδὲ νῦν προθυμίας,¹
         ὡς ἂν παροῦσα καὶ σὺ μοι ξυμμαρτυρῇς²
         οἷα πέφυκα δυστυχοῦσι δεσπόταις.
    ἄγ᾽,¹ ὦ φίλη παῖ² τῶν πάροιθε μὲν λόγων

λαθώματὸ¹ ἄρθρα, καὶ σὺ δ᾽ ἠλίου γενοῦ²
στυγνὴν ὁρῶν λεύσσω καὶ γνῶμης ὁδὸν,
ἐγὼ δ᾽ ὅσης σοι μὴ καλῆς τῆδ᾽ εἴπομην¹
πράσσειν² δι᾽ ἄλλον εἰμι θελτίω λόγον.

Candidates for Honors will likewise translate the annexed strophes

XO.　ἢ μέγα μοι τὰ θεῶν μελεδήμαθ᾽,¹ ὅταν φρένας ἔλθῃ,　　str.
λύτας παραιρεῖ.¹ ξύνεσιν² δέ τις ἐλπίδι κεύθων
λείπεται ἐν τ᾽ εὔχας θνατῶν καὶ ἐν ἔργμασι² λεύσσων.
ἄλλα γὰρ ἄλλοθεν ἀμείβεται,
μετὰ δ᾽ ἵσταται ἀνδράσιν αἰὼν
πολυπλάνητος ἀεί.

εἴθε μοι εὐξαμένα θεόθεν τάδε μοίρα παράσχοι,¹　　antistr.
τύχαν μετ᾽ ὄλβου καὶ ἀκήρατον² ἄλγεσι θυμόν·¹
δόξα δὲ μήτ᾽ ἀτρεκὴς² μήτ᾽ αὖ παράδυμος² ἐνείη·¹
ῥάδια δ᾽ ἤθεα τὸν αἰριον
μεταβαλλομένα χρόνον ἀεὶ
βίον συνευτυχοίην.¹

II.—1. Every word to which the figure 1 is attached is to be parsed
fully and accurately, and every word to which the figure 2 is attached is
to be derived or decompounded.　When a word or a form is poetic, its
equivalent in Attic prose should be subjoined.

2. Any noteworthy constructions or idioms may be briefly elucidated.

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## SECOND YEAR STUDENTS.

I.—Translate perspicuously the following passage from the IXth Book
of HERODOTUS:—

Τισαμενῷ ἀνεῖλε ἡ Πυθίη ἀγῶνας τοὺς μεγίστους ἀναιρήσεσθαι πέντε. ὁ
μὲν δὴ ἁμαρτὼν τοῦ χρησμοῦ, προσεῖχε γυμνασίοισι ὡς ἀναιρησόμενος
γυμνικοὺς ἀγῶνας, ἀσκέων δὲ πεντάεθλον παρὰ ἓν πάλαισμα ἔδραμε νικᾶν
Ὀλυμπιάδα Ἱερωνύμῳ τῷ Ἀνδρίῳ ἐλθὼν ἐς ἔριν. Λακεδαιμόνιοι δὲ μαθόντες
οὐκ ἐς γυμνικοὺς ἀλλ᾽ ἐς ἀρηΐους ἀγῶνας φέρον τὸ Τισαμενοῦ μαντήϊον,¹
μισθῷ ἐπειρῶντο πείσαντες Τισαμενὸν ποιέεσθαι ἅμα Ἡρακλείδησι² τοῖσι
βασιλεῦσι ἡγεμόνα τῶν πολέμων. ὁ δὲ ὁρῶν² περὶ πολλοῦ ποιευμένους¹
Σπαρτιήτας φίλον αὐτὸν προσθέσθαι, μαθὼν τοῦτο ἀνετίμα, σημαίνων¹ σφι,²
ὥς, ἤν μιν² πολιήτην¹ σφέτερον ποιήσωνται τῶν πάντων μεταδιδόντες, ποιήσει
ταῦτα, ἐπ᾽ ἄλλῳ μισθῷ δ᾽ οὔ. Σπαρτιῆται δὲ πρῶτα μὲν ἀκούσαντες δεινὰ
ἐποιεῦντο καὶ μετίεσαν² τὸ χρησμοσύνης τὸ παράπαν, τέλος δὲ, δείματος
μεγάλου ἐπικρεμαμένου τοῦ Περσικοῦ τούτου στρατεύματος, καταίνεον² μετ-
ιόντες. ὁ δὲ, γνοὺς τετραμμένους σφέας,² οὐδ᾽ οὕτω² ἔφη ἔτι ἀρκέεσθαι τούτοισι¹
μοῦνοισι,¹ ἀλλὰ δεῖν ἔτι καὶ τὸν ἀδελφεὸν¹ ἑωυτοῦ Ἡγίην² γίνεσθαι Σπαρ-
τιήτην ἐπὶ τοῖσι αὐτοῖσι λόγοισι τοῖσι² καὶ αὐτὸς γίνεται.¹　ταῦτα δὲ λέγων
οὗτος ἐμιμέετο² Μελάμποδα, ὡς εἰκάσαι² βασιλευΐην² τε καὶ πολιητηΐην¹ αἰτεο-
μένους.　καὶ γὰρ δὴ καὶ Μελάμπους, τῶν ἐν Ἄργεῖ γυναικῶν μανέντων,²
ὥς μιν² οἱ Ἀργεῖοι ἐμισθοῦντο ἐκ Πύλου παῦσαι τὰς σφετέρας γυναῖκας τῆς
νούσου,¹ μισθὸν προετείνατο² τῆς βασιληΐης τὸ ἥμισυ.　οὐκ ἀνασχομένων δὲ

τῶν Ἀργείων ἀλλ' ἀπιόντων, ὃς ἐμαίνοντο πλεῦνες' τῶν γυναικῶν, οὕτω δὴ
ὑποστάντες τὰ' ὁ Μελάμπους προσσῖνεν ἥσαυ' δώσουσής οἱ' ταῦτα. ὁ δὲ
ἐνθαῦτα' ἰδ ἐπορίγευσα, φαμεν αὐτούς σπαμμμένους, φάς, ἢν μὴ ἰδ ἀδελ-
φεῷ Βίαντι μεταδῶσι τὸ τρυτημόρου' τῆς βασιληίης, οἱ ποιήσειν τὰ' βούλανται.
οἱ δὲ Ἀργεῖοι ἀπειληθέντες ἐς στευνὸν' καταινέουσι ἐπί ταῦτα. ὣς δὲ καὶ
Σπαρτιῆται—ἐδέοντο γαρ δεινῶς τοῦ Τισαμενοῦ—καὶ πάντα συνεχωρέον οἱ'
συγχωρησάντων δὲ οὕτω πῖντε σφ' μαντευόμενον ἀγῶνας τοὺς μεγίστους
Τισαμενὸς συγκαταρέλει.

II.—1. All will give the Attic form of every word to which the figure
1 is attached, and will substitute a proper equivalent for every word
which in Attic prose is either not used at all or used in a different sense.

2. All will (a) parse accurately and derive or decompound the words,
πετάθεθεν, Ὀλυμπιάδα, χρησομνϝσην, τρητημόριον, εἰκάσα, μετιόντες,
μετίεσαν, and (b) shew the force of the prepositions in ἀντῆμα, ἐπορίγευσα,
συγκαταρέλει.

3. Candidates for Honors will elucidate the constructions exemplified
in μαθόντες φέρον τὸ μαντνϝον and various parallel groups in this pas-
sage—μετίεσαν τῆς χρησομσύνης,—ἐπὶ τοῖσι αὐτοῖσι λόγοισι τοῖσι γ�&ϝαικα.
ὡς εἰκάσα (τινὰς τι καὶ τι) αὐτειμένους,—ἐπωρίϝετο πεῖθοντες τοὺϝκεθα,
—νικᾶν Ὀλυμπιάδα, νικᾶν Ὀλυμπιάδα,—παρὰ ἕν (or παρ'
ὀλίγον) εἰδήσε νικᾶν. They will likewise give other phrases for "to
compete with a person," "to win all the prizes," "to be within an ace of
victory," "to do all but win."

4. They will explain how far Tisamenos succeeded and, wherein he
failed, agreeably to the regulations usually observed in the *quinquennium,*
and adducing illustrations from the *Electra* of Sophocles as well as from
other sources.

5. They will mention what other service rendered by Bias by Melampus
is noticed in the XVth book of the *Odysseia,* and in what connexion
the two Brothers there are introduced.

Students not competing for Honors will translate perspicuously these
iambics from the *Electra* of Sophocles:—

$$\begin{array}{l}
\text{ὦ φίλταπ' ἀνδρῶν προσπόλων, ὥς μοι σαφῆ} \\
\text{σημεῖα φαίνεις ἐσθλὸς εἰς ἡμᾶς γεγώς'} \\
\text{ὥσπερ γὰρ ἵππος εὐγενής, κἂν ᾖ γέρων,} \\
\text{ἐν τοῖσι δεινοῖς θυμὸν οὐκ ἀπώλεσεν} \\
\text{ἀλλ' ὀρθὸν οὖς ἵστησιν, ὡσαύτως δὲ σε} \\
\text{ἡμᾶς τ' ὀτρύνεις καὐτὸς ἐν πρώτοις ἕπει.} \\
\end{array}$$

*          *          *          *          *

$$\begin{array}{l}
\text{διδάξω δ' πατρὸς τύμβον, ὡς ἔφίετο,} \\
\text{λοιβαῖσι πρῶτον καὶ καρατόμοις χλιδαῖς} \\
\text{στέψαντες εἶτ' ἄφορμον ἥξομεν πάλιν,} \\
\text{κύτωμα χαλκόπλευρον ἀρμένοι χεροῖν,} \\
\text{ἃ καὶ σὺ θάμνοις οἶσθά μοι κεκρυμμένα,} \\
\text{ὅπως λόγῳ κλέπτοντες ἡδεῖαν φάτιν} \\
\text{φέρωμεν αὐτοῖς, τοὐμὸν ὡς ἔρρει δέμας} \\
\text{φλογιστὸν ἤδη καὶ κατηνθρακωμένον.} \\
\text{τί γάρ με λυπεῖ τοῦθ', ὅταν λόγῳ θανὼν} \\
\end{array}$$

ἐργοισὶ σωθὶ εὐξειέγκαμεν κλέος ;
ἤδη γὰρ εἶδον πολλάκις καὶ τοὺς σοφοὺς
λόγῳ μάτην θνήσκοντας· εἶθ', ὅταν δόμους
ἔλθωσιν αὖθις, ἐκτετίμηνται πλέον.
ὡς κἄμ' ἐπαυχῶ τῇδέ τε τῇ φήμῃ ἴσον
δεδορκότ' ἐχθροῖς ἄστρον ὣς λάμψειν ἔτι.
ἀλλ', ὦ πατρῴα γῆ θεοί τ' ἐγχώριοι !
δέξασθέ μ' εὐνχοῦντα ταῖσδε ταῖς ὁδοῖς,
σύ τ', ὦ πατρῷον δῶμα ! σοῦ γὰρ ἔρχομαι
δίκῃ καθαρτὴς πρὸς θεῶν ὡρμημένος.

Candidates for Honors will translate these strophes :—

                              στροφὴ β.

ΧΟ.  οὗτοι σοὶ μοίνα, τέκνον ! ἄχος ἐφάνη βροτῶν,
     πρὸς ὅ τι σὺ τῶν ἔνδον εἶ περισσά,
     οἷς ὁμόθεν εἶ καὶ γονῇ ξύναιμος,
     οἵα ζώει Χρυσόθεμις τε καὶ Ἰφιάνασσα
     κρυπτᾷ τ' ἀχέων ἐν ἥβᾳ,
     ὄλβιος ὃν ἁ κλεινὰ γᾶ ποτε Μυκηναίων
     δέξεται εὐπατρίδαν Διὸς εὔφρονι
     νεύματι μολόντ' ἐνταδθ' Ὀρέσταν.

ΗΛ.  ὃν γ' ἐγὼ ἀκάματα προσμείνουσ' ἄτεκνος
     τάλαιν' ἀνύμφευτος αἰὲν οἰχνῶ,
     δάκρυσι μυδαλέα, τὸν ἀνήνυτον
     οἶτον ἔχουσα κακῶν· ὁ δὲ λάθεται
     ὧν τ' ἔπαθ' ὧν τ' ἐδάη.  τί γάρ οὐκ ἐμοὶ
     ἔρχεται ἀγγελίας ἀπατώμενον ;
     ἀεὶ μὲν γὰρ ποθεῖ, ποθῶν δ' ἀταξιοῖ φανῆναι.

                              ἀντιστροφὴ β.

ΧΟ.  θάρσει μοι, θάρσει, τέκνον ! ἔτι μέγας οὐρανῷ
     Ζεύς, ὃς ἐφορᾷ πάντα καὶ κρατεῖ·
     ᾧ τὸν ὑπεραλγῆ χόλον νέμουσα
     μήθ' οἷς ἐχθαίρεις ὑπεράχθεο μήτ' ἐπιλάθου.
     χρόνος γὰρ εὐμαρὴς θεός.
     οὔτε γὰρ ὁ τὰν Κρῖσαν βούνομον ἔχων ἀκτὰν
     παῖς Ἀγαμεμνονίδας ἀπερίτροπος
     οὔθ' ὁ παρ' Ἀχέροντα θεὸς ἀνάσσων.

ΗΛ.  ἀλλ' ἐμὲ μὲν ὁ πολὺς ἀπολέλοιπεν ἤδη
     βίοτος ἀνέλπιστον, οὐδ' ἔτ' ἀρκῶ·
     ἅτις ἄνευ τεκέων κατατάκομαι,
     ᾇς φίλος οὕτις ἀνὴρ ὑπερίσταται,
     ἀλλ' ἅπερεί τις ἔπακτος ἀναλία
     οἰκονομῶ θαλάμους πατρός, ὧδέ πον
     ἀεικεῖ σὺν στολᾷ, κενὰ δ' ἀμφίσταμαι τραπέζαις.

Very brief notes, critical and illustrative, may be subjoined.  If
readings different from the above be anywhere followed in translating,
they should be mentioned.

## ADVANCED CLASS.

Translate perspicuously these iambics from the *Eumenides* of AESCHYLUS:—

### ΑΠΟΛΛΩΝ.

ἔξω—κελεύω—τῶνδε δωμάτων τάχος
χωρεῖτ', ἀπαλλάσσεσθε μαντικῶν μυχῶν·
μὴ καὶ λαβοῦσα πτηνὸν ἀργηστὴν ὄφιν
χρυσηλάτου θώμιγγος ἐξορμώμενον
ἀνῇς ὑπ' ἄλγους μέλαν' ἀπ' ἀνθρώπων ἀφρὸν
ἐμοῦσα θρόμβους οὓς ἀφείλκυσας φόνου.
οὔτοι δόμοισι τοῖσδε χρίμπτεσθαι πρέπει·
ἀλλ' οὗ καρανιστῆρες ὀφθαλμωρύχοι
δίκαι σφαγαί τε σπέρματός τ' ἀποφθορᾷ
παίδων κακοῦτε χλοῦνις ἠδ' ἀκρωνία
λευσμός τε καὶ μύζουσιν οἰκτισμὸν πολὺν
ὑπὸ ῥάχιν παγέντες. ἆρ' ἀκούετε·
τοιας ἑορτῆς ἐστ' ἀπόπτυστοι θεοῖς
στέργηθρ' ἔχουσα. πᾶς δ' ὑφηγεῖται τρόπος
μορφῆς. λέοντος ἄντρον αἱματορρόφου
οἰκεῖν τοιαῦτας εἰκός, οὐ χρηστηρίοις
ἐν τοῖσδε πλησίοισι τρίβεσθαι μύσος.
χωρεῖτ' ἄνευ βοτῆρος αἰπολούμεναι·
ποίμνης τοιαύτης δ' οὔτις εὐφιλὴς θεῶν.

and likewise the following strophes from the same:—

### στροφὴ γ´.

μήτ' ἀνάρχετον βίον μήτε δεσποτούμενον
αἰνέσῃς. παντὶ μέσῳ τὸ κράτος θεὸς ὤπασεν· ἄλλα δ' ἄλλᾳ ἐφορεύει.
ξύμμετρον δ' ἔπος λέγω·
δυσσεβίας μὲν ὕβρις τέκος ὡς ἐτύμ', ἐκ δ' ὑγιείας
φρενῶν ὁ πᾶμφιλος καὶ πολυεύκτος ὄλβος.

### ἀντιστρ. γ´.

ἐς τὸ πᾶν δέ τοι λέγω· βωμὸν αἴδεσαι Δίκας,
μηδέ νιν κέρδος ἰδὼν ἀθέῳ ποδὶ λὰξ σὺ πατήσῃς·　ποινὰ ἐπέσται.
κύριον μένει τέλος.
πρὸς τάδ' ἄν τις τοκέων σέβας εὖ προτίων ξενοτίμους
δόμων τ' ἐπιστροφὰς αἰδόμενός τις ἔσθω.

### στροφὴ δ´.

ἐκ τῶνδ' ἀνάγκας ἄτερ δίκαιος ὢν οὐκ ἄνολβος ἔσται·
πανώλεθρος δ' οὔποτ' ἂν γένοιτο.
τὸν ἀντίτολμον δέ φαμὶ καὶ παραβάταν
τὰ πολλὰ παντόφυρτ' ἄνευ δίκας
βιαίως ξὺν χρόνῳ καθήσειν
λαῖφος ὅταν λάβῃ πόνος θραυομένας κεραίας.

ἀντιστρ δ΄.

εὐδεῖ δ΄ ἀκούοντας οὐδὲν ὑν μέσα δυσπαλές τε δίνᾳ.

γελᾷ δ΄ ὁ δαίμων ἐπ΄ ἀνδρὶ θερμῷ

τὸν οὔποτ΄ αὐχοῦντ΄ ἰδὼν ἀμηχάνοις δύαις

λαπαδνὸν οὐδ΄ ὑπερθέοντ΄ ἄκραν·

δι΄ αἰῶνος δὲ τὸν πρὶν ὄλβον

ἕρματι προσβαλὼν δίκας ὤλετ΄ ἄκλαυστος ἄϊστος.

As your version will necessarily deviate from the text printed above, —especially in regard to the iambic lines 7—12, and to the second strophe and antistrophe,—you will mention what readings you may prefer, keeping in view the laws of metre and syntax.

Brief notes, critical or illustrative, may be annexed to the translation.

LATIN.—*Examiner*, Professor Nesbitt.

### FIRST YEAR STUDENTS.

Translate:—

Cum illo vero quis neget actum esse præclare ? Nisi enim, quod ille minime putabat, immortalitatem optare vellet, quid non adeptus est quod homini fas esset optare ? qui summam spem civium, quam de eo iam puero habuerant, continuo adolescens incredibili virtute superavit : qui consulatum petivit nunquam, factus consul est bis, primum ante tempus, iterum sibi suo tempore, rei publicae pene sero : qui duabus urbibus eversis inimicissimis huic imperio non modo praesentia, verum etiam futura bella delevit. Quid dicam de moribus facillimis, de pietate in matrem, liberalitate in sorores, bonitate in suos, iustitia in omnes ? Nota sunt vobis. Quam autem civitati carus fuerit maerore funeris indicatum est. Quid igitur hunc paucorum annorum accessio iuvare potuisset ? Senectus enim quamvis non sit gravis, ut memini Catonem anno ante quam se mortuus mecum et cum Scipione disserere, tamen aufert eam viriditatem, in qua etiam nunc erat Scipio. Quam ob rem vita quidem talis fuit vel fortuna vel gloria, ut nihil posset accedere, moriundi autem sensum celeritas abstulit : quo de genere mortis difficile dictu est : quid homines suspicentur videtis. Hoc vere tamen licet dicere, P. Scipioni ex multis diebus, quos in vita celeberrimos laetissimosque viderit, illum diem clarissimum fuisse, quum senatu dimisso domum ad vesperum reductus a patribus conscriptis, populo Romano, sociis et Latinis, pridie quam excessit e vita, ut ex tam alto dignitatis gradu ad superos videatur deos potius quam ad inferos pervenisse.

(*a*) Explain the use of the subjunctive mood in the following expressions : *quod homini fas esset* ; *quam civitati carus fuerit* ; *quos in vita celeberrimos viderit*. Point out the idiom in the use of *celeberrimos* in the last expression

(*b*) *Duabus urbibus eversis.* What are the two cities referred to ? Write a note on *sibi suo tempore.*

(*c*) Explain accurately the import of the words—*a Patribus conscriptis populo Romano, sociis et Latinis.*

(*Additional for Honors.*)

Translate :

1. An memorem portas Lumenaque addita claustra,
Atque indignatum magnis stridoribus aequor
Iulia qua ponto longo ꜱatur unda refuso,
Tyrrhenusque fretis immittitur aestus Avernis ?
Haec eadem argenti rivos aerisque metalla
Ostendit venis, atque auro plurima fluxit,
Haec genus acre virum, Marsos pubemque Sabellam,
Adsuetumque malo Ligurem, Volscosque verutos,
Extulit; haec Decios, Marios magnosque Camillos,
Scipiadas duros bello, et te, maxime Caesar,
Qui nunc extremis Asiae iam victor in oris
Imbellem avertis Romanis arcibus Indum.
Salve, magna parens frugum, Saturnia tellus,
Magna virum : tibi res antiquae laudis et artis
Ingredior, sanctos ausus recludere fontes,
Ascraeumque cano Romana per oppida carmen.

(*a*) Explain the historical allusion in the first four lines, and quoet Horace's mention of the work.

(*b*) To what does Virgil refer in " *Qui nunc extremis*," etc.

(*c*) What is the import of the last line ?

2. Numquam ita quisquam bene subducta ratione ad uitam fuit
Quin res aetas usus semper aliquid adporꞇet noui,
Aliquid moneat : ut illa quae te scire credas nescias,
Et quae tibi putaris prima, in experiundo ut repudies.
Quod nunc mi euenit : nam ego uitam duram, quam uixi usque adhuc,
Prope iam excurso spatio mitto. id quamobrem ? re ipsa repperi
Facilitate nil esse homini melius neque clementia.
Id esse uerum ex me atque ex fratre cuiuis facilest noscere.
Ille suam egit semper uitam in otio, in conuiuio,
Clemens placidus, nulli laedere os, adridere omnibus :
Sibi uixit : sibi sumptum fecit : omnes bene dicunt, amant :
Ego ille agrestis, saeuos, tristis, parcus, truculentus, tenax
Duxi uxorem : quam ibi miseriam uidi ! nati filii,
Alia cura : heia autem, dum studeo illis ut quam plurimum
Facerem, contriui in quaerundo uitam atque aetatem meam :
Nunc exacta aetate hoc fructi pro labore ab eis fero,
Odium : ille alter sine labore patria potitur commoda.
Illum amant, me fugitant : illi credunt consilia omnia,
Illum diligunt, apud illum sunt ambo, ego desertus sum :
Illum ut uiuat optant, meam autem mortem expectant scilicet.
Ita eos meo labore eductos maximo hic feci meo
Paulo sumptu : miserorum omnem ego capio, hic potiur gaudia.
Age age nunciam experiamur contra, cequid ego possiem
Blande dicere aut benigne facere, quando huc prouocat.
Ego quoque a meis me amari et magni pendi postulo.
Si id fit dando atque obsequendo, non posteriores feram.
Deerit : id mea minume refert, qui sum banc maximas.

(*a*) Write brief notes on the following expressions : *ita subducta ratione ; sibi ; uixit ; patria potitur commoda ; illum ut uiuat optant ; posteriores feram ; id mea refert.*

(*b*) Scan the first and last lines.

(*c*) State accurately to what class of literary compositions the plays of

Terence belong. Mention the three parts of which they consist. State, from the prologue, the source of the *Adelphi*. How did Terence deviate from common usage in his prologues?

Translate:

Ceterum nemini omnium maior iustiorque [fama sc.] quam ipsi con- suli videri : gaudio efferri, quo parto opiparum alter consul victus foret, ea so victos. resiituios ac refectos militibus animos, nec quemquam esse praeter collegam qui dilatam dimicationem vellet : eum animo magis quam corpore aegrum memoria vulneris aciem ac tela horrere. sed non esse eum aegro arescendum. quid enim ultra differri aut teri tempus? quem tertium consulem, quem dictatorem exspectari? castris suis Carthaginiensium in Italia ac prope in conspectu urbis esse. non Siciliam ac Sardiniam victis ademptus, nec cis Hiberium Hispaniam peti, sed solo patrio terraque in qua geniti forent peti Romanos, "quantum ingemiscant" inquit " patres nostri circa moenia Carthaginis bellare soliti, si vident nos, progeniem suam, duos consules consularesque exercitus, in media Italia parentis intra castra ; Poenum, quod inter Alpis Apenninumque agri sit, suae dicionis fecisse:" haec adsidens aegro collegae, haec in praetorio prope contionabundum agere. stimulabat et tempus propinquum comitiorum, ne in novos consules bellum differretur, et occasio in se unum vertendae gloriae, dum aeger collega erat. itaque neequiquam dissentiente Cornelio parari ad propinquum certamen milites iubet.

(*a*) Give the principal tenses of the following verbs: *efferri ; teri ; adimptus ; pelli ; ingemiscam ; tuleishens ; dissentiente.*

(*b*) Explain the use of the subjunctive mood in the phrase, *qui dilatam dimicationem vellet*, and that of the infinitive in *quem tertium consulem——exspectari*. State the force of the form *contionabundus*.

(*c*) State and illustrate by examples the various uses (1) of *dum* and *donec*, (2) of the passive impersonal verb. Frame a short sentence to illustrate the use of the Future Infinitive passive, and analyse the form.

Translate into Latin prose:

(*For Candidates who wish merely to pass the Examination.*)

The people were divided into three tribes, the Ramnenses, the Titienses, and the Luceres ; the Ramnenses were called from Romulus, the Titienses from Tatius, and the Luceres from Lucumo, an Etruscan chief, who had come to help Romulus in his war with the Sabines, and dwelt on the hill called Caelius. In each tribe there were ten curiae, each of one hundred men ; so all the men of the three tribes were three thousand, and these fought on foot, and were called a legion. There were also three hundred horsemen, and these were called Celerians, because their chief was that Celer who had slain Remus. There was, besides, a council of two hundred men, which was called a senate, that is a council of elders.

(*For Candidates for Honors.*)

A great commercial state where wealth was largely gained and highly valued, was always in danger, according to the opinion of the ancient philosophers, of losing its spirit of enterprise. But in this Carthage resembled the government of British India ; necessity first made her merchants soldiers ; and when she became powerful, then the mere impulse of a great dominion kept up her energy ; she had much to maintain

and what they already possessed gave her the power, and with the temptation of acquiring more. Besides it is a very important point in the state of society in the ancient world, that the business of the soldier was no isolated profession, but mixed up essentially with the ordinary life of every citizen. Hence those who guided the councils of a state were really also to conduct its armies; and military glory was a natural object of ambition to many enterprising minds, which, in modern Europe, could only hope for distinction in the cabinet or in parliament.

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SECOND YEAR STUDENTS.

I. Translate:

Ultima Cumaei venit iam carminis aetas,
Magnus ab integro saeclorum nascitur ordo ;
Iam redit et Virgo, redeunt Saturnia regna ;
Iam nova progenies coelo demittitur alto.
Tu modo nascenti puero, quo ferrea primum
Desinet ac toto surget gens aurea mundo,
Casta fave Lucina : tuus iam regnat Apollo.
Teque adeo decus hoc aevi, te Consule, inibit,
Pollio, et incipient magni procedere menses ;
Te duce, si qua manent, sceleris vestigia nostri
Irrita perpetua solvent formidine terras.
    Ille deûm vitam accipiet, divosque videbit
Permixtos heroas, et ipse videbitur illis,
Pacatumque reget patriis virtutibus orbem.
    At tibi prima, puer, nullo munuscula cultu,
Errantes hederas passim cum baccare tellus
Mixtaque ridenti colocasia fundet acantho.
Ipsae lacte domum referent distenta capellae
Ubera, nec magnos metuent armenta leones.
Ipsa tibi blandos fundent cunabula flores.
Occidet et serpens, et fallax herba veneni
Occidet ; Assyrium vulgo nascetur amomum.

(*a*) Write brief notes on *Cumaei carminis ; Virgo ; Teque adeo : decus aevi ; sceleris ; irrita ; munuscula.*

(*b*) Explain the construction of *quo* in the 7th verse.

(*c*) Mention the various conjectures which have been offered as to the child who is the hero of the fourth Eclogue. What is the probable date of the composition ?

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(*Additional for Honors.*)

2. Translate ; adding brief notes where you deem it necessary :

Nanque canebat, uti magnum per inane coacta
Semina terrarumque animaeque marisque fuissent
Et liquidi simul ignis, ut his exordia primis
Omnia et ipse tener mundi concreverit orbis ;
Tum durare solum et discludere Nerea ponto
Coeperit, et rerum paullatim sumere formas ;
Iamque novum terrae stupeant lucescere solem,
Altius atque cadant summotis nubibus imbres,
Incipiant silvae cùm primùm surgere, quaeque
Rara per ignaros errent animalia montes.
Hinc lapides Pyrrhae iacto, Saturnia regna,
Caucasiasque refert volucres furtumque Promethei.

## 3. Translate:

Nos autem tenebras cogitemus tantas, quantae quondam eruptione
Aetnaeorum ignium finitimas regiones obscuravisse dicuntur, ut per
biduum nemo hominem homo agnosceret, quum autem tertio die sol
illuxisset, tum reviviscere illis viderentur. Quod si hoc idem ex aeternis
tenebris contingeret, ut subito lucem aspiceremus, quaenam species caeli
videretur? Sed assiduitate cotidiana et consuetudine oculorum adsues-
cunt animi neque admirantur neque requirunt rationes earum rerum,
quas semper vident, proinde quasi novitas nos magis quam magnitudo
rerum debeat ad exquirendas causas excitare. Quis enim hunc hominem
dixerit, qui quum tam certos caeli motus, tam ratos astrorum ordines
tamque inter se omnia connexa et apta viderit, neget in his ullam inesse
rationem eaque casu fieri dicat, quae quanto consilio gerantur nullo con-
silio adsequi possumus? An quum machinatione quadam moveri aliquid
videmus, ut sphaeram, ut horas, ut alia permulta, non dubitamus quin illa
opera sint rationis; quum autem impetum caeli admirabili cum celeritate
moveri vertique videamus constantissime conficientem vicissitudines
anniversarias cum summa salute et conservatione rerum omnium, dubi-
tamus quin ea non solum ratione fiant, sed etiam excellenti divinaque
ratione? Licet enim iam remota subtilitate disputandi oculis quodam
modo contemplari pulcritudinem rerum earum, quae divina providentia
dicimus constitutas.

4. Ea qui considerit quam inconsulte ac temere dicantur, venerari
Epicurum et in eorum ipsorum numero, de quibus haec quaerat sit, habere
debeat. Solus enim vidit primum esse deos, quod in omnium animis eorum
notionem impressisset ipsa natura. Quae est enim gens aut quod genus
hominum quod non habeat sine doctrina anticipationem quandam deorum?
quam appellat πρόληψιν Epicurus, id est antecetam animi rei quandam
informationem, sine qua nec intellegi quidquam nec quaeri nec disputari
potest. Cuius rationis vim atque utilitatem ex illo caelesti Epicuri de
regula et indicio volumine accepimus.

(a) Explain accurately the import of the Epicurean πρόληψις
(b) What are the Greek equivalents of *regula* and *judicium* ? Explain
their import.

## 1. Translate:

Trepidantiaque inde et prope iam in suos consternatos media acie in ex-
tremam ad sinistrum cornu adversus Gallos auxiliares agi iussit Hannibal;
id extemplo haud dubiam feeere fugam, eoque novus terror additus Roma-
nis, ut fusa auxilia sua viderunt. Itaque quum iam in ordum pugnarum,
decem milia ferme hominum, cum aliud evadere nequissent, media Afrorum
acie, quae Gallicis auxiliis firmata erat, cum ingenti caede hostium per-
rupere: et cum neque in castra reditus esset flumine interclusis, neque
prae imbri satis decernere possent, qua sufs opem ferrent, Placentiam recto
itinere perrexere. plures deinde in omnes partes eruptiones factae; et qui
flumen petiere aut gurgitibus absumpti sunt, aut inter cunctationem
ingrediendi ab hostibus oppressi: qui passim per agros fuga sparsi erant,
vestigia cedentis sequentes agminis Placentiam contendere. aliis timor
hostium audaciam ingrediendi flumen fecit, transgressique in castra per-
venerunt, imber vivae mixtus et intoleranda vis frigoris et hominum
iumentorumque et armorum et elephanto prope omnia absumpsit. Poeno
hostis Poenis flumen Trebia fuit; et ita torpentes pati in castra rediere,
ut vix laetitiam victoriae sentirent. Itaque nocte insequenti, cum prae-
sidium castrorum et quod reliquum ex magna parte militum erat ratibus

Trebiam traicerent, aut nihil sensere obstrepente pluvia, aut, quia iam moveri nequibant prae lassitudine ac vulneribus sentire sese dissimularunt; qutetisque Poenis tacito agmine ab Scipione consule exercitu Placentiam ei perductus, inde Pado traiectus Cremonam, ne duorum exercituum hibernia una colonia premeretur.

(a) Give the principal tenses of *iussit*; *nequissaent*; *perrexero* (account for the irregularities of *pergo*); *oppressi*; *abrumpeti*; *sentirent*.

(b) Explain the following constructions: *adversus Gallos agi iussit*; *eum in ortem pugnantes*; *audacium ingrediendi flumen*; *finis insequendi hostis*; *Pado traiectus Cremonam*.

### (For Students who wish merely to pass the Examination.)

Translate :—

Word is brought to Caesar that it was the intention of the Helvetii to make their way through the territory of the Sequani and the Ædui, into the borders of the Santones, which are not far from those of the Tolosates —a state which is in the Province. Should this be done, he clearly saw that it would be attended with great danger to the Province, that it should have for neighbours a warlike race, the enemies of the Roman people, in open and corn-producing tracts of country. For these reasons he set Titus Labienus his lieutenant over the works which he had constructed. Himself hastened to Italy by forced marches, raised there two legions, drew out of winter quarters the three which were wintering near Aquileia, and with these five legions hastened into further Gaul by the shortest route over the Alps.

### (For Candidates for Honors.)

As soon as the sun rose all their boats were manned and armed. They rowed towards the island with their colours displayed, with warlike music and other martial pomp. As they approached the coast, they saw it covered with a multitude of people whom the novelty of the spectacle had drawn together, and whose attitudes and gestures expressed wonder and astonishment at the strange objects which presented themselves to their view. Columbus was the first European who set foot in the new world which he had discovered. He landed in a rich dress and with a naked sword in his hand. His men followed, and kneeling down, they all kissed the ground which they had so long desired to see. They next erected a crucifix, and prostrating themselves before it, returned thanks to God for conducting their voyage to such a happy issue.

### THIRD YEAR STUDENTS.

I. Translate :—

Igitur cupido Caesarem invadit solvendi suprema militius ducique, permoto ad miserationem omni qui aderat exercitu ob propinquos, amicos, denique ob casus bellorum et sortem hominum.  praemisso Caecina, ut occulta saltuum scrutaretur pontesque et aggeres humido paludum et fallacibus campis imponeret, incedunt maestos locos visuque ac memoria deformis.  prima Vari castra lato ambitu et dimensis principiis trium legionum manus ostentabant ; dein semiruto vallo, humili fossa accisae iam reliquiae consedisse intellegebantur : medio campi albentia ossa, ut fugerant, ut restiterant, disiecta vel aggerata.  adiacebant fragmina telorum equorumque artus, simul truncis arborum antefixa ora.  lucis propinquis barbarae arae, apud quas tribunos ac primorum ordinum

centuriones mactaverunt. et cladis alus superstites, pugnam aut vincula
elapsi, referebant hic cecidisse legatos, illic raptas aquilas ; primum ubi
vulnus Varo adactum, ubi infelici dextera et suo ictu mortem invenerit ;
quo tribunali contionatus Arminius, quot patibula captivis, quas scrobes,
utque signis et aquilis per superbiam insuerit.

Igitur Romanus qui aderat exercitus sextum post cladis annum trium
legionum ossa, nullo noscente alienas reliquias an suorum humo tegeret,
omnes ut conductos, ut consanguineos, aucto in hostem ira, mœsti simul
et infensi condebant.    primum extruendo tumulo cæspitem Cæsar
posuit, gratissimo munere in defunctos et præsentibus doloris socius.

II. Translate the following, and write brief notes on the words printed
in Italics :—

(a) *Res* eo anno *prolatas* haud referrem, ni pretium foret Cn.   Pisonis
et Aruntii Galli super eo negotio diversas sententias noscere.

(b) *Cunnagenus* Q. Servæus præponitur, tum primum *ad jus prætoris*
*translata.*

(c) Nam Augustus inter *alia dominationis arcana* vetitis nisi permissu
ingredi senatoribus aut *equitibus Romanis illustribus* seposuit Ægyptum.
Tacitus varies the expression, *dominationis arcana* ?

(d) At Drusus ægre *egressus vegetandis auspiciis*, mox ovans intravit.

(e) Sexto demum consulatu Cæsar Augustus, potentiæ securus, quæ
*triumviratu* jusserat, abolevit deditque jura quis *pace* et *principe* uter-
emur.

III. (a) " Quippe Augustus supremis sermonibus, cum tractaret,
quinam adipisci principem locum suffecturi abnuerent aut impares vellent
vel idem possent cuperentque"—Mention the persons who, in the opinion
of Augustus, respectively fulfilled these conditions.

(b) Tacitus has divided the principate of Tiberius into several distinct
periods marked by different characteristics ?

(c) What was Sejanus' first public charge ?   Mention the two great
instruments of despotism which he organised.   Relate the immediate
occasion of his fall.   Quote Tacitus' summary of his character.

(d) Mention the surviving members of the Imperial family at the
death of Tiberius.

Translate :—

As soon as the approach of the troops was announced, Cæsar went
out to meet them, and ascended his tribunal, which had been erected on
a plain before the gates of the city.   After distinguishing the soldiers
who by their rank or merit deserved a particular attention, Julian
addressed himself in a studied oration to the surrounding multitude.
He celebrated their exploits with grateful applause ; encouraged them
to expect with alacrity the honour of serving under the eyes of a powerful
and liberal monarch, and admonished them that the commands of
Augustus required an instant and cheerful obedience.   The soldiers who
were apprehensive of offending their general by an indecent clamour,
or of belying their sentiments by false and vain acclamations, maintained
an obstinate silence, and, after a short pause, were dismissed to their
quarters.   The principal officers were entertained by Cæsar, who pro-
fessed, in the warmest language of friendship, his desire and inability to
reward, according to their deserts, the brave companions of his victories.
They retired from the feast full of grief and perplexity, and lamented the
hardship of their fate, which tore them from their beloved general and
from their native country.

Translate:

I. Ut hoc utimur maxume more moro
Molestoque multum, atque uti quique sunt
Optumi maxumi, morem habent hunc : cluentis
      Sibi omnes volunt esse nullos : bonitae an
      Mali sint, id haud quaeritant. res magis
Quaeritur, quam cluentum fides quoiusmodi
Cluent.   sint pauper atque haud malus, nequam habetur :
      Sin dives malust, is cluens frugi habetur.
      Qui nec leges neque aequom bonum usquam colunt,
         Sollicitos patronos habent.
         Datum denegant, quod datumst :
            Litium pleni, rapaces,
         Viri fraudulenti :
            Qui aut foenore aut periuriis
      Habent rem paratam : mens est in querellis.
Iuris ubi dicitur dies, simul patronis dicitur :
[Quippe qui pro illis loquuntur, quae mala fecerint :]
      Aut ad popularn aut in iure aut ad iudicem rest.
Sicut me hodie nimis sollicitus cluens quidam habuit, neque quod
   nolui
Agere aut quicum *uolui* licitumst : ita me attinuit, ita detinuit.
Apud aediles pro eius factis plurimisque pessumisque,
Dixi causam : condiciones tetuli tortas, confragosas.
Plus minus, quam opus fuerat dicto, dixeram ut eam sponsio
Controuersiam fieret.   quid ille ? quid ? praedam dedit ;
Nec magis manufestam ego hominem unquam ullum teneri vidi :
Omnibus mali factis testes tres aderant acerrumi.
Di illum omnes perdant qui mi hodie tot corrupit diem :
Meque adeo, qui hodie forum unquam oculis inspexim meis !

(a) Explain accurately the various legal processes referred to.

(b) Give an analysis of the metres employed in this *canticum.*

(c) To what class of comedy, *looking to its plot*, does the *Menaechmi* belong ? The subject has been a favourite one in ancient and modern times ?

(d) Mention some of the reasons for denying the genuineness of the prologue.

II. 1.  Aequam memento rebus in arduis
            Servare mentem, non secus in bonis
               Ab insolenti temperatam
                  Laetitia, moriture Delli,

         Seu maestus omni tempore vixaria,
            Seu te in remoto gramine per dies
               Festos reclinatum bearis
                  Interiore nota Falerni.

         Quo pinus ingens albaque populus
            Umbram hospitalem consociare amant
               Ramis, et obliquo laborat
                  Lympha fugax trepidare rivo ?

         Huc vina et unguenta et nimium breves
            Flores amoenae ferre iube rosae,
               Dum res et aetas et sororum
                  Fila trium patiuntur atra.

> Cedes coëmtis saltibus et domo
> Villaque, flavus quam Tiberis lavit,
>     Cedes et extructis in altum
>         Divitiis potietur heres.

> Divesne prisco natus ab Inacho,
> Nil interest, an pauper et infima
>     De gente sub divo moreris,
>         Victima nil miserantis Orci.

> Omnes eodem cogimur, omnium
> Versatur urna serius ocius
>     Sors exitura et nos in aeternum
>         Exsilium impositura cymbae.

What emendations have been proposed in the text of the third strophe?

2.                          *desine mollium*
    Tandem querelarum—

Cite from the Odes parallels to this construction.

3. Explain the following expressions:

> Sabella pectus *increpare* carmina?
> Quae finis aut quod me manet *stipendium* ?
>                           *prudens anus*

> *Novendiales* dissipare *pulceres*—

4. Criticize the text and explain the following passages:

(a) Teque, dum procedis, io Triumphe,
    Non semel dicemus, io Triumphe,
        Civitas omnis—

(b) Io Triumphe, nec Jugurthino parem
    Bello reportasti ducem,
    Neque Africanum, cui super Carthaginem
        Virtus sepulcrum condidit—

(c) Clementia licet occupes
    Tyrrhenum omne tuis et mare Apulicum—

Translate into Latin verse:

III. Fair ship, that from the Italian shore
        Sailest the placid ocean plains
        With my lost Arthur's loved remains,
    Spread thy full wings and waft him o'er.

    So draw him home to those that mourn
        In vain ; a favourable speed
        Ruffle thy mirror'd mast, and lead
    Thy prosperous floods his holy urn.

    All night no ruder air perplex
        Thy sliding keel, till Phosphor, bright
        As our pure love, thro' early light
    Shall glimmer on the dewy decks.

    Sphere all your lights—around, above ;
        Sleep, gentle heavens, before the prow ;
        Sleep, gentle winds, as he sleeps now,
    My friend, the brother of my love.

MODERN LANGUAGES.—*Examiner*, Professor Meissner.

### FIRST YEAR STUDENTS.

#### ITALIAN.

Translate into Italian:

I. When I had seen the danger I avoided it. It was necessary to be cautious. You would be sure of success if you had patience. He has bought these fields and sold those. Do not speak to those children. He went through the fields and meadows. She moved me to tears. They will guide you on the right way. This is my best, nay, my only friend. Send him away!

II. In the middle ages, artisans and merchants enrolled themselves in guilds and confraternities in order to protect their common interests and to ward off the attacks of powerful noblemen. In a similar manner lawyers formed themselves into colleges and physicians into corporations. The clergy guarded carefully their privileges and the army their exemptions. For all men, who fear attacks, naturally seek allies and companions.

Translate into English:

I. Il coraggio più difficile, e a' deboli specialmente più necessario, è il coraggio di soffrire al bisogno. E la nostra educazione fiacca, e 'l molle affetto dei padri e delle madri, col non ci dare, col toglierci tale coraggio, ci rende infelici e cattivi. Cattivi, dico, perchè l' uomo che non ha paura, non sa. compatire; è crudele, non foss' altro, per non curanza, per aridità di cuore. Quindi la necessità d'assuefarli a soffrire ne' mali irreparabili, a tacer ne' leggieri, a non pretendere intera esenzione da quegl' incomodi che nel fanciullo e nell' uomo impaziente diventano dolori vivissimi. Quindi l'opportunità di talvolta a bella posta esporli a leggier disagio nel sono, nel cibo, nello stare, nell' andare, a cose prepararsi, ai più serii quasi che si vengono forse addimesando sur lor tenero capo. Quindi l'utilità di distinguere in loro il lamento che viene da male vero, e quel che da vizio; l'utilità di non li contentare subito e in tutto, acciocchè non s'avvezzino a voler, l'impossibile. L'uomo impara a comandare prima che a mover parola, e quanto più debole si sente, più vorrebbe essere imperioso tiranno. In vero, ogni tirannide non è altro che debolezza.—TOMMASEO.

II. Belle, fresche e purpuree viole
    Che quella candidissima man cole,
    Qual pioggia, o qual puro aer produr volse
    Tanto più vaghi fior che far non suole?
    Qual rugiada, qual terra, ovver qual sole
    Tante vaghe bellezze in voi raccolse?
    Onde il soave odor natura tolse,
    O il ciel che a tanto ben degnar ne vuole?
    Care mie violette, quella mano,
    Che v' alzeo tra l' altre, ov' eri, in sorte,
    V' ha di tante eccellenze e pregio ornate.
    Quella, che il cor mi tolse, e di villano
    Lo fe gentile, a cui siete comporte,
    Quella dunque e non altre ringraziate.
                    LORENZO DE' MEDICI.

64          *Appendix to Report of the President.*

Appendix,
No. 4.

General
Class Exa-
mination.

FRENCH.

Translate into French.

I. You will receive a letter either from my father or my brother. The ruling passion of Cæsar was ambition. That letter is well-written. Here is the answer which I have received. He is a man of whom I have a good opinion. You always contradict me. His horse was not worth ten guineas. Do you play on the violin? I play no instrument whatever. Have you travelled in Spain? No, sir, I have never left England. Who will pay this bill? He who has ordered the things. By what train will you leave? By the eight o'clock train. Have you a silver knife? No, but I have a knife with an ivory handle.

II. The joy of the English was extreme on the appearance of their monarch, who had suffered so many calamities, who had acquired so much glory, and who had spread the reputation of their name into the farthest East, whither their fame had never before been able to extend. He gave them, soon after his arrival, an opportunity of publicly displaying their exultation, by ordering himself to be crowned anew, at Winchester; as if he intended, by that ceremony, to reinstate himself in his throne and to wipe off the ignominy of his captivity.—HUME.

Translate into English.

III. Si on pouvait confronter Suétone avec les valets de chambre des douze Césars, pense-t-on qu'ils seraient toujours d'accord avec lui? et en cas de dispute, quel est l'homme qui ne parierait pas pour les valets de chambre contre l'historien?

Parmi nous, combien de livres ne sont fondés que sur des bruits de ville, ainsi que la physique ne fut fondée que sur des chimères répétées de siècle en siècle jusqu'à notre temps!

Quelqu'un raconte au grand audiencier l'Etoile que Henri IV., chassant vers Créteil, entra seul dans un cabaret, où quelques gens de loi de Paris dînaient dans une chambre haute. Le roi, qui ne se fait pas connaître, et qui cependant devait être très connu, leur fait demander par l'hôtesse s'ils veulent l'admettre à leur table, on lui cède une partie de leur rôti pour son argent. Les Parisiens répondent qu'ils ont des affaires particulières à traiter ensemble, que leur dîner est court, et qu'ils prient l'inconnu de les excuser.

Henri IV. appelle ses gardes, et fait fouetter outrageusement les convives, "pour leur apprendre, dit l'Etoile, une autre fois à être plus courtois à l'endroit des gentilshommes."

Quelques auteurs, qui ne se sont pas mêlés d'écrire la vie de Henri IV. copient l'Etoile sans examen, rapportent cette anecdote; et ce qu'il y a de pis, ils ne manquent pas de la louer comme une belle action de Henri IV.

Quand on fait n'est ni vrai ni vraisemblable; et loin de mériter des éloges, c'est été à la fois dans Henri IV. l'action la plus ridicule, la plus lâche, la plus tyrannique et la plus imprudente.—VOLTAIRE.

LAMENTO.

*La Chanson du Pêcheur.*

Ma belle amie est morte:
    Je pleurerai toujours;
Sous la tombe elle emporte
    Mon âme et mes amours.

Dans le ciel, sans m'attendre.
Elle s'en retourna ;
L'ange qui l'emmena
Ne voulut pas me prendre.
Que mon sort est amer !
Ah ! sans amour, s'en aller sur la mer !

Sur moi la nuit immense
S'étend comme un linceul ;
Je chante ma romance
Que le ciel entend seul.
Ah ! comme elle était belle
Et comme je l'aimais !
Je n'aimerai jamais
Une femme autant qu'elle.
Que mon sort est amer !
Ah ! sans amour, s'en aller sur la mer !

<div align="right">GAUTIER.</div>

## GERMAN.

1. Translate into German :

When I awoke, I saw my friend standing before me. Every year, when the shooting season begins, we go for a few months to Scotland. They put off their departure till next week. I have put the inkstand upon the table. I stayed three days in Weimar. He could not say anything ? Your translation is more correct than his. He follows the example of his older brother. Have you shut the door ? I shall take off my shoes. The train starts at seven o'clock in the morning. I have let the bird fly. I have been willing but I have not been permitted. I should stay at home if I were not obliged to pay a visit.

Translate into English :

Scene. Ein großer Saal auf dem Rathhause zu Heilbronn. Das ganze Rathhaus ist mit Stistsjungs Nittern gefüllt.

Göß. Das was Hülffe vom Himmel ! Wie kommst du so ermüdigst und unvermuthet, Schwager ?

Sickings. Ohne Zauberei. Ich hatte zwei, drei Boten ausgeschickt, zu hören wie dir's ginge ? Da ich die Nachricht von ihrem Mekneid macht ich mich auf den Weg. Nun haben wir sie.

Göß. Ich verlange nichts als ritterliche Hast.

Sickings. Du bist zu edel. Dich nicht einmal des Vortheils zu bedienen, den der Nechtschaffenne über den Meineidigen hat ! Sie haben im Unrecht, wie wollen ihnen keine Zisten unterlegen. Ich habe im Befehle des Kaisers schändliche mißbraucht. Und wie sie Ihro Majestät Name, hatte ich nur so groß und mehr bringen. Es ist ja mein Sache. Ich bin nun jetzt mit ihrigen zisischen gewesen.

Sickings. Und bist von jeher zu kurz gekommen. Meine Meinung ist : sie haben keine Knechte und dem Gesängniß und dann zusammt ihnen auf deinen Eid nach deiner haus gelesen lassen. Du magst versprechen, nicht und keiner Treuinen zu gehn, und wird immer besser seyn als Kort.

Göß. Sie werden sagen : Meine Güter seyen dem Kaiser heimgefallen.—GOERTHA.

<div align="right">E</div>

III. Bleib immer treu und redlichkeit
    Bis an dein kühles Grab,
    Und weiche keinen Finger breit
    Von Gottes Wegen ab.

    Dann kannst du wie auf grünen Au'n
    Durch's Pilgerleben gehn,
    Dann kannst du sonder Furcht und Graun
    Dem Tod in's Antlitz sehn.

    Dann wird die Sichel und der Pflug
    In deiner Hand so leicht;
    Dann singst du beim Wassertrug,
    Als wär' die Wein gereicht.

    Dem Bösewicht wird alles schwer,
    Er thue, was er thu';
    Das Laster treibt ihn hin und her
    Und läßt ihm keine Ruh.

    Der schöne Frühling lacht ihm nicht,
    Ihm lacht kein Aehrenfeld;
    Er ist auf Saug und Trug erpicht
    Und wünschet sich nichts als Geld.

    Drum bleib treu und redlichkeit
    Bis an dein kühles Grab,
    Und weiche keinen Finger breit
    Von Gottes Wegen ab.—Hölty.

IV. (a) Give the Infinitive, Imperfect and Past Participle of the
following verbs: to swallow, to break, to help, to bend, to happen,
to eat, to write, to fall, to grow, to think.

(b) Give the Genitive Singular and Nominative Plural of the follow-
ing nouns : the bear, the ribbon, the eye, the field, the forest.

(c) Determine the gender of the following substantives : Mai, Jahr,
Burg, Kloster, Silber, Apfel, Stube, Söhnlein, Betrübnis.

## SECOND YEAR STUDENTS.

### FRENCH.

Translate into French :

I. The death of Henry VII. had been attended with as open and
visible a joy among the people as decency would permit ; and the acces-
sion · and · coronation of his son Henry VIII spread universally a
declared and unfeigned satisfaction. Instead of a monarch jealous,
severe, and avaricious, who, in proportion as he advanced in years, was
sinking still deeper in those unpopular vices, a young prince of eighteen
had succeeded to the throne, who, even in the eyes of men of sense,
gave promising hopes of his future conduct, much more in those of the
people, always enchanted with novelty, youth, and royal dignity. The
beauty and vigour of his person, accompanied with dexterity in every
manly exercise, was farther adorned with a blooming and ruddy
countenance, with a lively air, with the appearance of spirit and activity
in all his demeanour. His father, in order to remove him from the

knowledge of public business, had hitherto occupied him entirely in the pursuits of literature; and the proficiency which he made gave no bad prognostic of his parts and capacity. Even the vices of vehemence, ardour, and impatience, to which he was subject, and which afterwards degenerated into tyranny, were considered only as faults incident to unguarded youth, which would be corrected when time had brought him to greater moderation and maturity. And as the contending titles of York and Lancaster were now at last fully united in his person, men justly expected from a prince, obnoxious to no party, that impartiality of administration which had long been unknown in England.—HUME.

Translate into English:

II. L'esprit est vivement impressionné par l'apparition de Jérusalem surgissant tout à coup au milieu d'un désert dans tout l'appareil formidable d'une ville de guerre; on voit ses développer dans le lointain lugubre sur les pentes de la vallée de Josaphat la longue ligne de ses remparts crénelés et dorés par le soleil; ainsi antique de murailles, flanquée de tours solides, elle a l'air d'attendre un assaut de Godefroy de Bouillon.

On entre dans la ville par les portes voûtées sous lesquelles retentissent les pas pesants des caravanes. Les petites collines et les petites vallées qu'enferment les remparts sont coupées de rues étroites dont le pavé luisant et poli présente une surface aussi glissante que le marbre. Quelques—unes de ces rues sont garnies de trottoirs et larges qu'ils laissent à peine entre eux la place nécessaire pour le passage d'un cheval.

Ces ondulations du sol sur lequel repose la Jérusalem moderne portent les noms les plus célèbres de l'histoire sacrée. Ainsi une partie du Mont-Sion est enfermée dans la ville; le Golgotha, qu'on se figure ordinairement en dehors de Jérusalem, est compris dans l'enceinte de ses murailles et même dans l'intérieur de l'église du Saint-Sépulcre. Mais ces mouvements de terrain sont à peine appréciables lorsqu'ils sont vus à une certaine distance.—REYNAUD.

III. LES CATACOMBES DE ROME.

Sous les remparts de Rome et sous ses vastes plaines,
Dans ces routes profondes, des voûtes souterraines,
Qui, pendant deux mille ans, creusés par les humains,
Donnèrent leurs rochers aux palais des Romains.
Avec ses ornements et sa magnificence,
Rome entière sortit de cette abîme immense.
Depuis, loin des regards et du fer des tyrans,
L'Église encor naissante y cacha ses enfants,
Jusqu'au jour où, du sein de cette nuit profonde,
Triomphante, elle vint donner des lois au monde,
Et marqua de sa croix les drapeaux des Césars.
Jaloux de tout connaître, un jeune amant des arts,
L'amour de ses parents, l'espoir de la patrie,
Brûlait de visiter cette demeure obscure,
De notre antique foi vénérable berceau.
Un fil dans une main, et de l'autre un flambeau,
Il entre; il se confie à ces voûtes nombreuses
Qui croisent en tous sens leurs routes ténébreuses.
Il aime à voir ce lieu, sa triste majesté,
Le palais de la nuit, cette sombre clté,
Ces temples où le Christ vit ses premiers fidèles,
Et de ces grands tombeaux les ombres éternelles.—DELILLE.

IV. Give an account, in French, of Pierre Corneille.

### GERMAN.

Translate into German:

I. We shall ascend the mountain, before the sun rises. You speak of an affair which is very important. He cherishes the hope of soon regaining his freedom. It is to be feared. I will make inquiry. May I read what you have written? He looks, as if he had no good conscience. I was just going to send for you. There was dancing and singing. He performs his duty most conscientiously. You succeed in everything.

II. His favourite abode was at Rheinsberg, near the frontier which separates the Prussian dominions from the Duchy of Mecklenburg. Rheinsberg is a fertile and smiling spot in the midst of the sandy waste of the Marquisate. The mansion, surrounded by woods of oak and beech, looks out upon a spacious lake. . . . . His retirement was enlivened by a few companions, among whom he seems to have preferred those who, by birth or extraction, were French. With these inmates he dined well and supped well; but literature was his chief resource.

Translate into English:

III. Abends, als wir uns nach genossener Mahlzeit in unsere Zimmer zurückgezogen hatten, saßen wir noch lange an dem vortspringenden Erker unserer Wohngemächer und sahen in die Stille Nacht hinaus. Wenn bei dem nicht entenden Geräusche der großen Städte leben, um es zu empfinden, welch eine Wonne in jener tiefen Stille liegt, in der es dem Ohr möglich wird, die sanften Laute der Natur in sich aufzunehmen. Kein Wölfchen stand am Himmel, hell beglänzt regte sich. Der Mond zog ruhig über der Erde hin und goß sein gelbliches Licht auf die zerriebene. Die Sterne verschwanden bei vor seinem Glanze. Nur die größten und hellsten flimmerten sichtbar herver, und wenn man die Augenblicke zusammenhielte, sah man, wie auch die Sterne leuchteten und drückten. Man mußte es genießen zu können, was hier der Boden die eingesogene Wärme ausstrahlte und die begünnante Atosse so in sogenteicheiten Thau verwandelte. Wie ein Kind an der Mutterbrust, so still ruhten die Gräser und die Blumen und die Bäume, und trunken sich satt, bevor sie schliefen gingen, und trunken sich Kraft, um am nächsten Tage das Sonnenlicht verarbeiten zu können. Ganz sanft und leise fingen hier ein Zweig an Bäverigen-Aloße und leise murmelte Raspiengang am Baume zu schmunzen und zu nisten an, als ob sie müden wäre; man die Dusigkeit könnte vor Sehnsucht noch nicht ruhen und sang ihre lang gezogenen Klagen mit flötender Bitte, mit bebendem Losten, mit schmetterndem Anruf durch die linde Nacht.—FANNY LEWALD.

VI. Du schönes Fischermädchen,
Treibe den Kahn an's Land,
Komm zu mir und setze dich nieder:
Wir kosen Hand in Hand.

Leg' an mein Herz dein Köpfchen
Und fürchte dich nicht zu sehr,
Bertraust du dich doch sorglos
Täglich dem wilden Meer.

Mein Herz gleicht ganz dem Meere,
Hat Sturm, und Ebb' und Fluth,
Und manche schöne Perle
In seiner Tiefe ruht.—HEINE.

### THIRD YEAR STUDENTS.

I. Translate into French :

The evils of poverty are comparative—they depend on climate. In warm climates, where little food, no fuel, and scanty shelter are required, the sting is scarcely felt till poverty becomes starvation. They depend on contrast. Far above the point where poverty becomes actual famine, it may become unbearable if contrasted strongly with the unnecessary luxury and abundance enjoyed by the classes above. Where all suffer equally, as men and officers suffer in an Arctic voyage, men bear hardship with cheerfulness : but where the suffering bears heavily on some, and the luxury of enjoyment is out of all proportion monopolized by a few, the point of reaction is reached long before penury has become actual want : or again, when wealth or rank assumes an insulting domineering character—when contemptuous names for the poor are invented, and become current among the more unfeeling of a wealthy class, then the falsehood of superiority can be tolerated no longer ; for we do not envy honours which are meekly borne, nor wealth which is uncostentatious.—REV. FREDERICK W. ROBERTSON.

II. Translate and comment upon the following passage :

Li emperere s'est culcet en un pret ;
Sun grant espiet met e sun chef li ber :
Icele noit ne s' volt il desarmer,
Si ad vestut sun blanc osberc saffret.
Laciet sun helme li est al or gemmet,
Ceinte Joiuse, unches ne fut sa per,
Ki oscoun jur muet .xxx. clartez.
Asez avum de l' lance [oit] parler
Dunt Nostre Sire fut en la cruit saffret :
Carles en al l'amure, mercit Deu !
En l'orest punt l'ad faite manuverer.
Pur ceste honur e pur ceste bontet,
Li nums Joiuse [a] l'espee fut dunet :
Baruns franceis ne l' devent ublier :
Enseigne en unt de Munjoie [es]crier ;
Pur ço ne l' poet nule gent cuntrester.

III. Subject for Essay : William the Conqueror.

### GERMAN.

Translate into German—

I. The curiosity, entertained by all civilized nations, of inquiring into the exploits and adventures of their ancestors, commonly excites a regret that the history of remote ages should always be so much involved in obscurity, uncertainty, and contradiction. Ingenious men possessed of leisure, are apt to push their researches beyond the period in which literary monuments are framed or preserved ; without reflecting, that the history of past events is immediately lost or disfigured when entrusted to memory and oral tradition, and that the adventures of barbarous nations, even if they were recorded, could afford little or no entertainment to men born in a more cultivated age. The convulsions of a civilized state usually compose the most instructive and most interesting part of its history ; but the sudden, violent, and un-

prepared revolutions incident to barbarians, are so much guided by caprice and terminate so often in cruelty, that they disgust us by the uniformity of their appearance; and it is rather fortunate for letters that they are buried in silence and oblivion.—DAVID HUME.

Translate into English:

II. Unser Meister ist derjenige, unter dessen Anleitung wir uns in einer Kunst fortwährend üben, und belehrt uns, wie wir nach und nach zur Fertigkeit gelangen, sinngemäß die Grundsätze mitzuüben, nach welchen handelnd wir das ersehnte Ziel am sichersten erreichen.

In solchem Sinne war ich Meister von niemand. Wenn ich aber aussprechen soll, was ich den Deutschen überhaupt, besonders den jungen Dichtern geworden bin, so darf ich wohl ihren Meister nennen; in so fern ich sie früh am meisten gewahr worden, daß, wie der Mensch von innen heraus leben der Künstler von innen heraus wirken müsse, indem er, gebärde er sich wie er wolle, immer nur sein Individuum an den Tag fördern wird.

Seht er dabei frisch und froh zu Werke, so manifestirt er gewiß den Werth seines. Lebens, die Hoheit der Kunmst, vielleicht auch die anmüthige Hoheit, die ihm von der Natur verliehen ist.

Ich kann übrigens recht gut bemerken, auf wen ich in dieser Art gewirkt; es entspringt daraus gewissermaßen eine Naturbegünstigung, und aus dieser Art ist es möglich Original zu sein.—GOETHE.

III.   Was will die einsame Thräne?
   Sie trübt mir ja den Blick;
   Sie blieb aus alten Zeiten
   In meinem Auge zurück.

   Sie hatte viel leuchtende Schwestern,
   Die alle zerflossen sind,
   Mit meinen Qualen und Freuden,
   Zerflossen in Nacht und Wind.

   Wie Nebel sind auch zerflossen
   Die blauen Sternelein,
   Die mir jene Freuden und Qualen,
   Gelächelt in's Herz hinein.

   Ach, meine Liebe selber
   Zerfloß wie eitel Hauch!
   Du alte, einsame Thräne,
   Zerfließe jetzunder auch.—HEINE.

IV. Subject for Essay : De Göttinger Dichterbund.

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MATHEMATICS.—*Examiner, Professor Purser.*

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### FIRST YEAR STUDENTS.

### ALGEBRA.

1. A man can reap a field by himself in 18 hours, with his elder son's help in 8 hours, and with his youngest son's help in 10 hours, how long would he take if both helped him?

2. Given $\dfrac{x-y}{x+y}=\dfrac{3}{5}$, $\dfrac{1}{y-\frac{1}{3}}=\dfrac{9}{4}$, find $x$ and $y$.

3. If $\alpha$ and $\beta$ be the values of $x$ which satisfy the equation $x^2+px+q=0$, prove that $\alpha^3+\beta^3=p^3-3pq$,

and that $\dfrac{1}{\alpha}+\dfrac{1}{\beta}=-\dfrac{p}{q}$.

4. Solve the equations:—

$$x+\frac{5}{x-6}=12,$$

$$\sqrt{(a+x)(a-b)}+\sqrt{(a-x)(a-b)}=2\sqrt{ax}.$$

5. Three numbers are in geometric progression and three times the sum of the extremes is nine times the mean ; find the common ratio.

6. Prove that $\log\left(\dfrac{a}{b}\right)=\log a-\log b$.

Given $\log 2 = \cdot 30103$, find $\log x$ when $x=\dfrac{5^{\frac{5}{2}}}{2^{\frac{3}{5}}}$.

7. Prove the binomial theorem for positive integral exponents.

Show that $1+\left(\dfrac{n}{1}\right)^3+\left(\dfrac{n}{1}\cdot\dfrac{n-1}{1.2}\right)^3+\&\text{c.}=$ the coefficients of $x^p y^m z^n$ in $[(x+y)(y+z)(z+x)]^n$.

8. Solve the equations:—

$$\frac{1}{x}+\frac{1}{y}=\frac{1}{a}; \quad \sqrt{1-x}+\sqrt{1-y}=b.$$

9. Expand $a^x$ in powers of $x$.

10. Show that $\dfrac{y^{\frac{1}{n}}-1}{n}$ approaches the limit $\log(y)$ as $n$ diminishes indefinitely.

11. State and prove some of the different tests for the convergency of series.

Examine the convergency of

$$1-\frac{1}{1^4}+\frac{1}{2^4}+\frac{1}{3^4}+\&\text{c.}$$

12. Reduce the problem of eliminating $x$ between two biquadratics to that of eliminating three variables from four simple equations.

13. Find what relation must subsist amongst the coefficients of the equation

$$x^4+px^3+qx^2+rx+s=0,$$

that it may be written as a quadratic in $y$ where $y=x^2+mx$m being an arbitrary constant.

14. Calculate to seven places of decimals the logarithms of 2, 3, and 7 to the base 10, given $M=\cdot4342945$.

1. In any triangle, the square of the side subtending an acute angle is less than the sum of the squares of the sides containing that angle, by twice the rectangle contained by either of these sides and the line intercepted between the perpendicular let fall on it from the opposite angle and the acute angle.

2. If two lines cut one another inside a circle the rectangle contained

*Appendix.*
*No.* 8.

by the segments of one is equal to the rectangle contained by the segments of the other.

*General*
*Class Ex-*
*amination*

3. Define the terms mean proportional and third proportional. Find a third proportional to two given lines.

4. Assuming the formulæ for the sines and cosines of sums and differences prove that—

$$\sin \theta = 2 \sin \frac{\theta}{2} \cos \frac{\theta}{2} \text{ and } \cos A - \cos B = -2 \sin \frac{A+B}{2} \sin \frac{A-B}{2}.$$

5. Prove that in any triangle—

$$\frac{\sin A}{\sin B} = \frac{a}{b} \text{ and } \frac{\tan \frac{1}{2}(A-B)}{\tan \frac{1}{2}(A+B)} = \frac{a-b}{a+b}.$$

6. ACB is a right-angled triangle, C being the right angle: a perpendicular CD is dropped on the base. Let one side BC and the adjacent angle be denoted by α and θ respectively; express in terms of α and θ the lines AC, AB, CD, AD, BD.

7. The three sides of a triangle are *a, b, c,* prove that the interval between the foot of the internal and external bisectors of the angle C is

$$\frac{2abc}{a^2 - b^2}.$$

8. Show that the four intersections of perpendiculars of the four triangles formed by four intersecting lines lie in a straight line.

9. A circle cuts the sides of a triangle A, B, C in a α', β β', γ γ' prove that if Aα, Bβ, Cγ meet in a point, Aα', Bβ', Cγ' do so also.

10. Given the angles that the sides of a known triangle subtend to an observer in the same plane, how would you compute his distance from each vertex.

11. If R, *r* are the radii of the circles circumscribed to and inscribed in a triangle and δ the distance between their centres, prove that δ² = R² − 2 R *r*.

12. Prove that in a right-angled spherical triangle cos = A tan *b*. cot *c*.

13. If α, *y* be the segments of the arc of a great circle drawn across a small circle on the sphere and passing through a fixed point, prove that tan ½α. tan ½*y* = constant.

14. Given base and sum of cosines of sides of a spherical triangle find the locus of vertex.

15. Given base of a spherical triangle and sum of base angles show that either bisector of the vertical angle passes through a fixed point.

16. Prove that in a spherical triangle

$$\cot \frac{E}{2} = \frac{\cot \frac{a}{2} \cot \frac{b}{2} + \cos C}{\sin C},$$

where E=spherical excess.

Hence deduce the corresponding formula on the plane.

## SECOND YEAR STUDENTS.

1. Show that the equation *y=mx+b* represents a right line.

Give diagrams of the loci represented by the equations *x+y+1=0* *x² − y² = 0*     *x² + y² = 0.*

2. Find by co-ordinate geometry the locus of a point such that the square of its distance from the origin varies as its distance from a given line.

3. Find what relations must hold amongst the coefficients that the general equation of the second degree may represent a circle, and supposing it to do so, show how to determine its centre and radius.

4. Find the equation of the tangent to the parabola $y^2 = x$ (1) without (2) with the aid of the differential calculus.

5. Show that if we transform the expression $ax^2 + 2hxy + by^2$ to a different pair of axes, $\dfrac{a + b - 2h \cos \omega}{\sin^2 \omega}$ and $\dfrac{ab - h^2}{\sin^2 \omega}$ are unaltered by the transformation. What geometric relations of a conic can you obtain from these invariants?

6. If through a given point on a conic two lines at right angles be drawn to the curve, the line joining the points where they meet the curve will pass through a fixed point on the normal.

7. Find the condition that the axis of a conic should meet at right angles the conic represented by the general equation.

If two normals to an ellipse cut each other at right angles the four segments are in proportion.

8. Investigate the polar reciprocal of a circle from an arbitrary centre.

9. Determine the equation of the circle inscribed in the triangle of reference in trilinear co-ordinates.

10. Show that if an equilateral hyperbola pass through three given points it will pass through a fourth given point.

11. Prove that in a right-angled spherical triangle, $\sin a = \sin c \sin A$. Show that if $\beta$ be the bisector of the hypothenuse
$$\sin^2 \beta = (\sin^2 A + \sin^2) \sin^2 \tfrac{1}{2} c$$

12. Prove that in a spherical triangle $\sin A = \dfrac{2n}{\sin b \sin c}$.

Given the base in a spherical triangle and the radical $n$, find locus of vertex.

## DIFFERENTIAL AND INTEGRAL CALCULUS.

1. Explain clearly what is meant by $\dfrac{dy}{dx}$, and in accordance with your definition investigate what it denotes (1) when $y$ is the ordinate of a curve, and $x$ the abscissa (2) when $y$ is the distance travelled by a moving point, and $x$ is the time.

2. Given $y = (a^2 + b^2 - 2ac)^{\frac{1}{2}} + x$, prove that $y$ is a maximum when $x = \dfrac{a^2}{2b}$.

3. Differentiate—
$$\dfrac{x}{(a + bx^3)^{\frac{1}{3}}} \; ; \; \dfrac{(a + x)^{a - bx - bx}}{\sqrt{1 + x^2}} \; ; \; \log\left\{ \dfrac{1 - x - \frac{\sqrt{2}}{2}\sqrt{1 + x^2}}{1 + x} \right\}.$$

4. If $y^x \log y = ax$ expand $y$ in terms of $x$ by Maclaurin's theorem.

5. Required to draw a circle passing through O the points of intersection of two intersecting lines, and through another fixed point A, so that if the points P Q, where ale circle meets the given lines, be joined, the area of the triangle P O Q be a maximum.

6. Prove the expressions for the radius of curvature
$$R = \dfrac{\left\{ 1 + \left(\dfrac{dy}{dx}\right)^2 \right\}^{\frac{3}{2}}}{\dfrac{d^2 y}{dx^2}} \; ; \; R = p + \dfrac{d^2 p}{d\phi^2}.$$

$p$ being the perpendicular on tangent and $\phi$ the angle which it makes with the axis.

7. Explain clearly the method of finding the envelope of a curve whose equation contains an arbitrary parameter.

Show that a system of conics having the same centre and directrix envelope two parabolas.

8. Apply the integral calculus to determine the area of an ellipse and the volume of a sphere.

9. Required—

$$\int_{-1}^{1} x^4 dx; \quad \int_{0}^{a} \frac{dx}{\sqrt{2-x^2}}; \quad \int \frac{x^3 dx}{(x-1)^{\frac{3}{2}}}.$$

10. Required—

$$\int \frac{dx}{1+x}; \quad \int \frac{dx}{(1+x^2)(1-x^2)}; \quad \int \frac{dx}{(3+\cos x)^2}.$$

11. Show that—

$$\frac{d}{da}\int_{b}^{x} dx \cdot \mathrm{F}(x,a) = \int_{b}^{x} dx \cdot \frac{d}{da} \cdot \mathrm{F}(x,a),$$

and hence that—

$$\int_{0}^{\frac{\pi}{2}} \frac{d\theta}{(m\cos^2\theta + n\sin^2\theta)^2} = -\left(\frac{d}{dm} + \frac{d}{dn}\right) \cdot \frac{\pi}{2\sqrt{mn}} = \frac{\pi\sqrt{m}+\sqrt{n}}{m^{\frac{3}{2}}n^{\frac{3}{2}}}.$$

12. Investigate by the method of infinitesimals the direction of the tangent to a hyperbola.

The intersection (P) of two tangents to a curve which cut at a constant angle traces out a locus; prove that the normal to this locus at the point P and the normals to the original curve of contact meet in a point.

NATURAL PHILOSOPHY.—*Examiner*, Dr. Everett.

SECOND YEAR STUDENTS.

EXPERIMENTAL PHYSICS.

1. Describe the vernier and the mode of using it.

2. State what you know regarding the vibrations of a pendulum, whose arc of vibration is small,—

(*a*) If it vibrates in one plane.

(*b*) If its lower extremity describes a circle or ellipse.

3. Explain the apparent attraction between two floating bodies both of which are wetted by the liquid.

4. State the conditions of equilibrium for a body floating in a liquid; and show that if the stem of a hydrometer be cylindrical, equal divisions upon it will not correspond to equal differences of specific gravity.

5. What is the law which connects the volume and pressure of a given quantity of gas at any temperature with its volume and pressure at zero.

6. Describe the Syren of Cagniard Latour, and the mode of using it to ascertain the number of vibrations which the note of a given organ pipe makes per second.

7. Define interference of undulations, and explain the heats which are heard when two notes of nearly the same pitch are sounded together.

8. The mean annual temperature at Edinburgh is 47° Fahr, and the

difference between the warmest and coldest month is 22°. Express these data in the Centigrade scale.

9. Describe the gridiron pendulum.

10. What are the characteristic properties of a diamagnetic as distinguished from a paramagnetic body?

11. What are meant by a magnetic field and lines of magnetic force? What is the form of the lines of magnetic force produced by a current of electricity flowing through a straight wire?

12. What is the effect of moving a copper wire in a magnetic field? Supposing the wire to be straight and the lines of force to be parallel, what must be the direction of motion to obtain the strongest effect, and what must be the direction of motion to obtain no effect at all?

13. If the dip and horizontal intensity of the earth's magnetic force at a given place are known, how are the total intensity be found?

14. Describe the electrophorus and explain its action.

15. According to what law does electric force vary from point to point in the air between two parallel plates of metal, one or both of which are electrified, the distance between them being small in comparison with their diameters. Point out the application of this law to Thomson's Portable Electrometer.

16. There are two coils of insulated wire, one of which can be inserted within the other and withdrawn. A current from a battery can at pleasure be sent through the primary coil or interrupted. Describe two distinct methods of generating in the secondary coil a current in the same direction as the current in the primary coil.

17. Mention the essential distinction between Morse's telegraph and that of Wheatstone and Cooke.

18. Compare the quantities of electricity that flow in a given time between two electrodes A and B when they are connected—

(1) by a wire of length $l$,

(2) by two wires, ACB, ADB each of length $l$,

(3) by one wire of length $3 l$,

the wires being supposed to be uniform with each other, and the electro-motive force between A and B being supposed the same in all three cases.

19. If instead of supposing the electromotive force constant in last question, we suppose the resistance of the battery equal to that of the wire $l$, compare the quantities of electricity that flow in the three cases.

## MATHEMATICAL PHYSICS.

1. Assuming the parallelogram of forces to be true for direction, prove it to be true for magnitude.

2. Define the moment of a force about a point, and prove that the moments of two forces about any point in the line of their resultant are equal.

3. A uniform bar 18 in. long, weighing 6 lbs., has weights of 10 lbs. and 15 lbs. suspended at its ends. Find the point about which it will balance.

4. A B C D is a square and G its centre. If the triangle A G B be cut out, show that the centre of gravity of the remainder is at a distance from G equal to $\frac{1}{9}$ of the side of the square.

5. Express the weight of M lbs. in absolute units of force. What is the velocity acquired in one second from rest by a mass of M lbs. (1) when

acted on by a force equal to the weight of P lbs. (2) when acted on by a force of Q absolute units.

6. When a point is moving in a curve, show that it is falling away from a tangent in such a manner that the space fallen through in a very short time $t$ is $\dfrac{v^2 t^2}{2r}$, $v$ denoting the velocity with which the point moves in the curve, and $r$ the radius of curvature.

7. Show that the effect of centrifugal force, in diminishing the apparent force of gravity, is proportional to the square of the cosine of the latitude.

8. A stone is projected vertically upwards with a velocity of 50 ft. per second. Find how high it will ascend; and with what velocity it will be moving at the expiration of 2 seconds.

9. Find the coefficient of friction when a body slides in one minute down an inclined plane whose inclination is 30° and length 100 yards.

10. A ball of mass M moving with velocity V overtakes another of mass M′ moving in the same direction with velocity V′. If they adhere together find the common velocity after impact.

11. If a clock keeps correct time when its pendulum is 30 inches long, how much will it gain or lose in 24 hours if the length be increased by a tenth of an inch.

12. Prove that for a spherical reflector $\dfrac{1}{D} + \dfrac{1}{d} = \dfrac{2}{r}$.

13. Show that the linear magnification produced by an astronomical refracting telescope is nearly equal to the ratio of the focal length of the object glass to that of the eye piece.

## HONOR CLASS.

### MATHEMATICAL PHYSICS.

1. Assuming the principal of the parallelogram of forces for rectangular resolution, prove that it must hold for oblique resolution.

2. If a number of forces acting at a point, not all in one plane, be in equilibrium, prove that the sum of their virtual moments is zero for any small displacement.

3. Show that two couples in planes inclined to one another are equivalent to a single couple.

4. Define the "central axis" of a system of forces acting on a rigid body.

5. Find the centre of gravity of an arc of a circle, and of the surface of a segment of sphere.

6. Show that the pressure between an element $ds$ of a string and a smooth convex surface is $\dfrac{T}{R} ds$, T denoting the tension of the string and R the radius of curvature of the string at $ds$. Does the same formula apply if the surface is rough?

7. Investigate the motion of a point which is constrained to remain on a given straight line and is attracted to a fixed centre outside of the line with a force varying directly as the distance.

8. Prove the equable description of areas about a centre of force.

9. Show that for a rigid body revolving about a fixed axis $\dfrac{d^2\theta}{dt^2} = \dfrac{G}{\Sigma mr^2}$.

10. Prove that the centres of oscillation and suspension for a compound pendulum are convertible.

11. Show that for a point moving in a plane curve the accelerations along and perpendicular to the radius vector are—

$$\frac{d^2r}{dt^2} - r\left(\frac{d\theta}{dt}\right)^2 \text{ and } \frac{1}{r}\frac{d}{dt}\left(r^2\frac{d\theta}{dt}\right)$$

12. A set of forces act in the sides of a gauche polygon and are numerically equal to the sides. Show that their moment about any axis is numerically equal to twice the projection of the polygon on a plane perpendicular to the axis.

### THIRD YEAR ENGINEERING STUDENTS.

#### NATURAL PHILOSOPHY APPLIED.

1. A chain 200 feet long, weighing 600 lbs., and hanging vertically, is hauled up to the level which its upper end originally occupied. Find the work done (1) if the chain be uniform, (2) if its weight per unit length varies directly as distance from lower end.

2. Enunciate and prove Guldinus' theorem for the volume of a solid of revolution, and apply it to find the volume of a right cone.

3. Describe the steam indicator, and show the exact interpretation of its diagrams as regards the work done in each portion of a double stroke.

4. Supposing the weight of an isosceles roof, to be equally distributed over the whole length of the rafters, find the amount of horizontal thrust at each wall plate.

5. Investigate the angular velocity-ratio of two arms revolving in the same plane, having their ends connected by a link.

6. Show that the angular velocities of two pieces moving in the same plane and working together with sliding contact, are inversely as the perpendiculars from the centres of motion on the common normal.

7. Show that involute teeth will work correctly together.

8. What is meant by "the line of resistance" in a structure divided into horizontal courses, and what is the condition of stability as far as the tendency of the structure to turn round any of its joints is concerned?

9. Show that the reaction between two surfaces cannot make with the common normal a greater angle than that whose tangent is the coefficient of friction.

10. Find the whole pressure (in addition to atmospheric) on a triangle whose vertex is at the surface of a liquid and base horizontal, the plane of the triangle being inclined 45° to the horizontal. Find also the point of application of the resultant pressure (1) when atmospheric pressure is neglected, (2) when it is considered equal to that of 33 feet of the liquid.

11. The diameter of the piston of an engine is 80 inches, the mean pressure of the steam is 12 lbs. per square inch, the length of the stroke is 10 ft. the number of strokes per minute is 11. What is the indicated horse power, and if the modulus of the engine be 0·6 how many cubic feet of water will it raise per minute from a depth of 250 fathoms?

### CHEMISTRY.—*Examiner,* Dr. Andrews.

#### PASS PAPER.

1. What is the law of the expansion of gases by heat?

2. How is the latent heat of water determined?

3. State the composition of water by volume and calculate from its composition the density of steam.

4. How is nitrous oxide prepared and what are its chief properties?

5. What are the sources of iodine, and how is it prepared?

6. Give a general account of spectrum analysis.

7. What is the composition of starch, and how is it converted into sugar?

8. What are the chemical changes which occur during the alcoholic fermentation?

## HONOR PAPER.

1. What is the relation between the atomic weights and specific heats of the elementary bodies?

2. How would you calculate the specific heat of a body by immersing a given weight of it at 212° in a given weight of water at a known temperature?

3. How is it proved that liquids are bad conductors of heat?

4. What is the distinction between a monad, dyad and triad element?

5. Why is the formula of sulphuric acid $H_2SO_4$ and that of nitric acid $HNO_3$? Why is the latter not written $H_2N_2O_4$?

6. Describe the chief properties of ozone, and state how it has been proved that ozone exists in the atmosphere.

7. How is the composition of amonia established by experiment?

8. Describe in symbols the reaction which takes place when copper dissolves in nitric acid.

9. What is the composition of fulminating mercury and how is it prepared?

10. What are the tests for cyanogen?

11. How would you distinguish potassium, rubidium and caesium by spectrum analysis?

12. What objects are accomplished in roasting metallic ores?

13. Give an account of Davy's original method of preparing potassium?

14. How is the ammonical amalgam prepared and what is supposed to be its composition?

15. What are the methods by which lime can be separated from magnesia?

16. How is the nitrogen determined in an organic analysis?

17. Give a general account of the acids derived by oxidation from the alcohols.

18. Calculate the weight of carbonic acid which 1 gramme of cane sugar ought to yield by fermentation.

19. Describe Daniell's battery and explain why it is constant in its action.

20. State the principal facts of diamagnetism?

21. Describe the construction and explain the theory of the induction machine.

CIVIL ENGINEERING.—*Examiner, Professor James Thomson.*

## FIRST YEAR STUDENTS.

### GEOMETRICAL DRAWING.

1. In each of the three figures accompanying Question 1, given the projections *a b, a' b'* of a straight line:—find its traces in each case, and give a brief explanation of your work. The accented letters in this and other questions following are to be understood as belonging to the vertical plane

of projection according to the mode of notation in Hall's Descriptive Geometry.]

2. Given the traces of two planes :—to find the projections of the common section of the planes. You should work and explain solutions of this problem in several different cases.

3. In the figure for Quest. 3, let $a$ $\gamma$ $c'$ be the traces of a plane, and $a$, $a'$ the projections of a point. It is required to draw the projections of the line which passes through the point and is perpendicular to the plane, and to determine the length of the part of it intercepted between the given point and the plane.

4. In each of the two figures for Quest. 4, let $b$ $\beta$ $b'$ be the traces of a plane, it is required to find the angle which it makes with the horizontal plane.

5. Make an isometrical projection of the house shown in outline in the figure for Quest. 5. The given drawing shows orthographic projections of a model of the house, and the required drawing is to be the isometric projection of the same model.

6. Work out a numerical expression for the ratio of the length of a line to that of its isometric projection.

7. Give a diagram, accompanied by brief explanations, showing the method described by Monge (in Heather's Translation) for constructing a perspective representation of an object given by its projections, when the picture surface is perpendicular to both planes of projection.

8. In the figure for Quest. 8, find accurately the intersection of the straight line $a$ $a$ $a'$ $c'$, with the plane $b$ $\beta$ $b'$.

9. In the figure for Quest. 9, find accurately the traces of the plane which passes through the three points $a$, $a'$; $b$, $b'$; and $c$, $c'$; and show various proofs of the truth of your result.

10. A hemisphere (which may be considered as representing a dome) stands on the horizontal plane of projection, having its diametrical circular section as base. The horizontal projection of a point on the surface being given, find the vertical projection of that point:—and draw the traces of the plane which touches the sphere on that point.

11. In perspective, what is meant by the measuring point of a given horizontal straight line, or set of parallel horizontal straight lines. It is the vanishing point of the base of a certain isosceles triangle, or of the base of a certain set of isosceles triangles : explain this further.

12. Assume across your paper a "a ground line" $x$ $y$ as the intersection of a horizontal and vertical plane of projection :—assume the horizontal trace of a vertical picture surface, oblique to the vertical plane of projection :—assume the two projections of a point of view or eye point :—and assume the two projections of an original point, whose perspective representation on the picture surface is to be found. Then let the picture surface be laid down in the plane of your paper at any convenient place, with the centre or pole of the picture, the horizon line, the central vertical line, and the "construction base" or line in which the picture surface is cut by the horizontal plane of projection all marked on it. Then find the perspective representation of the assumed original point. Give brief explanations of your work.

13. In your diagram for the previous question, assume the projections of a horizontal original straight line which cuts the picture. Then find in the perspective picture, as laid flat in the plane of delineation, the intersecting point and the vanishing point of that original line. Give brief explanations.

14. In your diagram for Quest. 12, or in a new one of the same kind, assume the projections of a straight line which cuts the picture

and is inclined to the horizon. Find in the picture, as laid flat in your plane of delineation, the intersecting point and vanishing point of that assumed original line. Give brief explanations.

15. Find, by construction, the angle which a ray of light makes with the horizontal or vertical plane of projection if it falls in the direction of a diagonal of a cube having one face in each plane of projection.

[In the following two questions the light is to be taken as falling in a direction in accordance with the condition stated in the foregoing question.]

16. Assume the projections of a horizontal flat thin circular disc, so that the shadow will fall wholly on the vertical plane of projection. Required the shadow.

17. A cylinder of the kind which is a solid of revolution; and is terminated at both ends by planes perpendicular to its axis, stands on the horizontal plane of projection with its axis vertical, and casts its shadow wholly on the horizontal plane of projection. Assume data, and draw the shadow.

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### SURVEYING, LEVELLING, MENSURATION, &c.

1. Taking for simplicity a telescope adapted for a levelling instrument as being made up with only two lenses, one the object glass, and the other the eye glass; explain how an image of a single distant point is formed in it; and how the eye glass enables the eye to see the image distinctly though placed too near to the image to see it distinctly without the eye glass.

2. Follow up your answer to the foregoing question by explaining farther how an image of an object having sensible size, or comprising many points, is formed, and how the apparent size of the object is magnified by the use of the telescope; and how the object appears to be inverted.

3. Explain the principle of the vernier, and give a practical rule for finding how to read the indications of any vernier.

4. In surveying, how would you proceed to place a ɣ theodolite exactly in the straight line between two distant stations without going to either of them, if the line is not known by clear marks than those stations? Both stations are visible from the ground where the line is to be accurately found. How would your procedure be modified if you were using a transit theodolite?

5. In Bidder's Table of Earthwork, what quantities do the two numbers inserted for each pair of end heights respectively express, and how are they used for finding the content of a prismoidal block of given dimensions?

6. In levelling for a section, the work is commenced from a bench mark (on bridge) known to be 51·65 feet above datum. The instrument being set up gives the following set of readings of the staff, viz. :—

|                                                                          |         |
|--------------------------------------------------------------------------|---------|
| On the B M on bridge,                                                    | 7·30 ft. |
| On the beginning or zero point of the section,                          | 4·05    |
| On point of the section at 40 links distance forward from commencement, | 7·84    |
| On point of the section at 100 links distance forward from commencement, | 13·68   |

The instrument is then moved to a new station, and there it gives the following readings, viz. :—

| At 100 links distance (same point as last preceding), | · | 1·28 ft. |
| At 200 links distance, . . . . . | · | 4·37 |
| At 300 links distance, . . . . . | · | 5·76 |
| At 375 links distance, . . . . . | · | 11·79 |

The instrument is then moved to a new station, and there is given the following readings, viz.:—

| At 375 links distance (same point as last preceding), | · | 2·21 ft. |
| At 400 links distance, . . . . . | · | 4·53 |
| On a bench mark on gate post, . . . . | · | 1·93 |

Make out the form of field book which you prefer to use, and insert in it the proper entries of all these data or observations, and work out the reduced levels, and make and explain whatever check on the arithmetical work you may deem suitable.

7. Explain how it comes that in an oblique bridge on Buck's system the widths of the voussoirs as measured along the edge of the soffit in the oblique face are unequal among one another, or that, in making a drawing, the inner ellipse of the oblique face must not be divided into equal spaces for the several voussoirs.

8. In the transit theodolite what is the test for finding whether the horizontal axis is truly perpendicular to the vertical axis? Is it essential or unessential to the validity of this test that the pivots or journals at the two ends of the horizontal axis be exactly equal to one another in diameter? Give reason for your answer to this.

9. In the transit theodolite explain any good test for ascertaining whether the line of collimation is perpendicular to the horizontal axis.

10. Explain the meanings of the following set of headings for the columns of a table for computations of a Traverse Survey, and explain the uses of the several columns :—(1) Courses, (2) Distances, (3) Northings, (4) Southings, (5) Eastings, (6) Westings, (7) Total Northings, (8) Total Eastings, (9) Sums of Total Northings, (10) Sums of Total Eastings, (11) East Products, (12) West Products, (13) North Products, (14) South Products.

11. The area of paper occupied by a field on a map is found by a planimeter to be 12·36 square inches. The map is on a scale of 3 chains to an inch. Find the area of the field in acres, roods, and perches.

12. Taking for granted that Professor Rankine's method for ranging circular curves for railways by angles at the circumference as taught in his manual of Civil Engineering, is sufficiently understood, explain how the process may be modified so as to introduce the curvature gradually in passing from each straight tangent into the main circular bend of the curve.

13. Give the reading of the horizontal limb of the theodolite submitted to you.

## SECOND AND THIRD YEAR STUDENTS AND COATES PRIZE.

### OFFICE AND FIELD WORK.

1. If a cone of any form, whether a solid of revolution or not, be given by its trace on the horizontal plane of projection together with the projections of its vertex : and if a straight line cutting the cone be given by its projections : explain how you could proceed to find the points in which that straight line cuts the conical surface.

2. Explain how you could proceed to draw the perspective represen-

tation of a given sphere, the picture surface being a vertical plane, and its position, as also that of the eye, and the position and size of the sphere, being all given.

3. The sides of a triangle as noted in the field book from the readings of the chain are 3250, 2176, and 2983 links respectively ; but the chain is ascertained to be $3\frac{1}{2}$ inches too long : calculate the true area of the triangle in square links.

4. In the same triangle the angle opposite to the side 3250 has been accurately measured by a theodolite, and found to be 76° 19' : calculate the area from this angle and two of the measured sides, and make the requisite correction for the error of the chain ; and give your result stated in square links.

5. In the same triangle calculate the angles opposite to the sides 2176 and 2983.

6. Answer one of the following two questions (a) and (b). ` No more credit will be given for answers to both than for a good answer to one.

(a.) Explain clearly whatever method you prefer for taking out areas from a map in case you have not a planimeter available.

(b.) Explain how to take areas from a map by means of Amsler's planimeter ; and, in doing so, give the necessary instructions to enable a person to know the signification of the figures which he would read from the Amsler's planimeter used in this College ; state, for instance, what area would the figures 4937 indicate, the figure 7 being the one read off by aid of the vernier ; and tell what is the meaning of the number 16589 engraved on one arm of the instrument. The instrument will be submitted to you if you wish.

7. Explain how to test a Y theodolite so as to find whether the axis of the cylindric rings, the line of collimation, and the bubble tube on the telescope, are in proper adjustment relatively to each other.

8. For computation of earthwork along an entire cutting or embankment, whether will the ordinary prismoidal method, or the method of "mean areas" give generally more correct results, and why ? Also explain whether either of them has an advantage over the other in respect to giving means for taking sidelong slopes into account.

9. Explain how to set out the "half-breadths" for a railway cutting in sidelong ground.

10. Explain the chief points of Professor Rankine's method for ranging circular curves for railways in the case in which a transversal is requisite.

## THIRD YEAR STUDENTS AND COATES PRIZE.

[Special credit will be given for a good knowledge of the requirements in the following questions.]

11. Assume for yourself the horizontal projection of a semi-cylindric oblique arch, together with any other necessary data ; and following in general the system prescribed by Buck and taught in the College, draw the development of the intrado or soffit in outline ; and draw at least two adjacent coursing joints, and two adjacent heading joints in the development of the soffit, and the corresponding coursing and heading joints in the development of the extrado, so as to show correctly the developed intradosal and extradosal faces of at least one stone. To avoid confusion of lines on your paper it is advisable that you make separate drawings for the intradosal and extradosal developments. Ob-

serve that your construction ought to involve the condition that the generating radius passing through a corner of the stone in the intrado will pass through the corresponding corner of the same stone in the extrado.

## QUESTIONS FOR THIRD YEAR STUDENTS AND COATES PRIZE CANDIDATES.

### CIVIL AND MECHANICAL ENGINEERING AND ARCHITECTURE.

1. Describe the chief characters of the Doric Order of Architecture, pointing out especially the characters by which it may be distinguished from the other Orders of classical Architecture, and also describing distinctively the Grecian and Roman varieties of the Doric Order.

2. What is meant by the terms Tracery; Plate Tracery; Bar Tracery; Feathering or Foliation; Foils; Cusps: and by what gradual developments did the Decorated Style of Gothic Architecture originate?

3. Give a description of the Perpendicular Style of the Gothic Architecture of England; and mention the period at which it prevailed. Explain also the meanings of the terms Hoodmould; Spandrel; Corbel; Mullion; Transom; Lancet Arch; Equilateral Arch; Drop Arch; Tudor Arch.

4. Give information on the properties of Hydraulic Lime and of Roman and Portland Cement, and describe the usual modes of their manufacture.

5. Prove that in ordinary circumstances a beam (a flooring joist for instance) supported at both ends is capable of bearing twice as much load spread uniformly over it, as it can bear of load applied at its middle.

6. How does the stiffness of a rectangular beam, to resist bending within its elastic limit, vary with the breadth of the beam; and how with the depth? Give proof of your answer or reasons for it.

7. How does the strength of a rectangular beam, to resist act or rupture by cross bending, vary with the breadth of the beam, and how with the depth? Your answer is to include proof or reasons.

8. A bar of metal uniform in cross section at all parts of its length is bent so as to form nearly a complete circular ring, the two ends not being brought quite to meet one another. The one end is held fixed, and the rest of the ring is left free. Explain how stress may be introduced so that the ring may be made to open to a circular curve of greater radius, or to close to a circular curve of less radius, without touching it except at or near the free end.

9. Prove that the moment of inertia of a circular area of radius $r$ round its own diameter is $\frac{1}{4}\pi r^4$; and explain the relation between this quantity and the stiffness of a round shaft against bending within the limit of its elasticity.

10. Explain the relation which subsists between shearing stress in a material, and a pull acting perpendicularly across a pull of equal intensity in the same material.

11. Explain, so far as you readily can, the relation which subsists between shearing stress or strain, and the torsion of a cylindric bar, or of a cylindric ring or tube.

12. For an oblique bridge on Buck's system, explain how to draw, either in full size or on a large scale, the curve of the development of

the half of one edge of the soffit, and how to use this curve, in the stone cutting, for marking on the stone the arris, or edge, which is to be common to the soffit and oblique face.

13. Make a sketch of any simple kind of braced girder, with top and bottom "flanges" or "booms" straight, parallel to one another, and horizontal. Then supposing a given weight applied at an apex not in the centre, while the girder is supported at both ends by piers or props giving truly vertical forces—Show clearly what parts of the structure will be subjected to push, and what to pull, in virtue of the action of the applied weight alone, the weight of the girder itself being left out of account, or the pushes and pulls in question being considered as the stresses superadded by the action of the applied weight to any stresses previously existing in the several parts of the girder.

14. Explain the nature of a cupola for melting iron in a foundry, and how it is used, or how worked by men, in the melting and casting of iron; and how it is usually supplied with air.

15. Mention and briefly describe one or more of the methods by which cast iron pipes are made; explaining the matter as you would do to a person knowing little or nothing of foundry work. Also describe some of the usual modes of jointing cast iron pipes in the laying of them underground for conveyance of water.

16. A diving bell is let down to the bottom of water 20 feet deep. What will be the pressure in pounds per square inch with which the air must be pumped down to supply the workmen?

17. In the flow of water in pipes and canals, what is meant by the *hydraulic mean depth*, and what by the *wetted perimeter*? and what by such terms as the *declivity* or *slope*, or *virtual declivity*, or *virtual inclination*? Also what is meant by the *virtual fall* of water which flows by a pipe from one reservoir to another; the two ends of the pipe being submerged under the water in the reservoirs into which they respectively open?

18. Give information as to the mode of flow of water in notches open above in vertical thin plates, and especially as to the gauging of water by rectangular notches with level crest.

## NATURAL PHILOSOPHY.—*Examiner, Professor Everett.*

### EXPERIMENTAL PHYSICS.

1. Two men A and B carry a burden weighing 120 lbs. by means of a pole resting on their shoulders. The burden hangs from the pole at a point distant 6 feet from A's shoulder and 4 feet from B's. Determine the weight borne by A.

2. A solid weighs 9 lbs. in air, 8 lbs. in water, and 7·6 lbs. in another liquid. Find the specific gravities of this liquid and of the solid.

3. If the barrel of an air pump has a fifth of the capacity of the receiver, how many strokes of the pump will be required to reduce the density of the air by one-half?

4. There is a cubic foot of air at temperature 20° Cent. and pressure 28 inches. What will be the volume of this air at 0° Cent. and 30 inches?

5. What temperature will be obtained by dissolving an ounce of ice at 30° Fahr. in 100 ounces of water at 70° Fahr.; the latent heat of water being 142° Fahr.?

6. Mention the characteristic differences between glass, rock salt, alum, and quartz, in their behaviour towards radiant heat and light.

7. In what respects do the vibrations which constitute sound differ from those which constitute light?

8. Compare the velocities of sound in the same gas at different states (1) of density, (2) of temperature; and compare its velocities in different gases at the same pressure and temperature.

9. Write down the ratios of the vibrations corresponding to the eight notes which compose a complete octave.

10. Name the methods by which the velocity of light has been determined, and describe any one of them fully.

11. How is a beam of parallel rays affected—
    (1.) By reflection from a concave mirror?
    (2.) By reflection from a convex mirror?
    (3.) By transmission through a concave lens?
    (4.) By transmission through a convex lens?
And what is meant by the principal focus?

12. Describe Volta's condensing electroscope.

13. Describe Fraunhofer's lines, and state how some of them may be imitated by artificial means.

14. Give an account of Regnault's experiments to test the accuracy of Boyle's (or Mariotte's) Law, and the results to which they led.

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NATURAL HISTORY.—*Examiner*, Professor Wyville Thomson.

1. Describe in detail the structure of the stem of a tree-fern, stating the different modifications of the various tissues which occur in it, with their general arrangement.

2. Describe the form, the structure, and the mode of development of starch granules; and state the circumstances under which they occur in plants.

3. Describe the different cases of *movement* in vegetable cells or in their contents.

4. Describe the structure of a cone of the genus pinus, stating the position and form of the ovules.

5. What are the characters of the orchidaceæ? Describe the flower of any orchid in detail, and sketch the general distribution, properties, and habits of the order.

6. Describe a fruit from each of the following orders, indicating its structure and mode of dehiscence (if dehiscent); rosaceæ; ranunculaceæ; caryophyllaceæ; cruciferæ; iridaceæ; cyperaceæ.

7. Give the general characters, the geographical distribution, the therapeutic properties, and the characters of the sub-orders of the compositæ. Name the principal economic and medicinal plants belonging to the order, and state their uses.

8. Describe in detail the plant provided, and refer it to its natural order.

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PRACTICAL CHEMISTRY.—*Examiner*, Dr. Andrews.

1. How would you analyse an alloy of copper, zinc, and tin?

2. State the method of determining the amount of phosphoric acid in a solution of ferric phosphate.

3. What are the blowpipe tests for the oxides of copper, iron, and manganese?

*Appendix,
No. 2.

General
Class Ex-
aminations.*

4. Describe Liebig's method of determining the amount of chloride of sodium in urine, and explain the principles on which it is founded.

5. What are the distinctive characters of uric acid and cystine?

6. How would you recognise the presence of nitrates in well water?

7. How is the amount of sulphuretted hydrogen in a sulphur spring determined? How would you recognise an alkaline sulphide if also present?

8. Describe the absorption bands of blood.

9. How would you analyze a mixture of marsh gas, olefiant gas, carbonic oxide and carbonic acid?

[The Candidates were also required to perform some qualitative analyses.]

*Matricula-
tion Ex-
amination.*

## MATRICULATION EXAMINATION.—OCTOBER.

The English Language.—*Examiner, Professor Yonge.*

QUESTIONS.

1. What foreign nations, by invasion or occupation, have wrought or contributed to changes in the English language? Give (approximately) the dates of the different invasions or occupations to which you especially refer.

2. What are the principal differences between the ancient and modern languages in respect of the declensions of nouns and verbs; are there similar differences for the principles of grammar between the same languages?

3. Give a brief sketch of any work which you have lately read.

4. At about what time did the English language assume its present form?

SUBJECT OF ESSAY.

The Degree in which a Knowledge of one Language, whether Ancient or Modern, assists the Student in learning another.

## MATHEMATICS.—*Examiner, Professor Purser.*

1. The price of three per cent. consols is $91\frac{1}{2}$, what sum must be invested in order to purchase enough stock to yield an income of £56 per annum?

What is the rate of interest on the money invested?

2. If 11 yards of cloth cost £4 18s. 8d., how many yards can be bought for £2 18s. 4d.? Work this question without using the rule of three.

3. Express $\frac{3}{7} \frac{5}{9} \frac{8}{21}$ as fractions having all the same denominator.

Multiply the first two together and divide by the third.

4. Divide 7380·976 by ·023, proving the truth of the result by vulgar fractions.

5. The tax on an article is trebled and the revenue derived from it is found to be doubled. Find the diminution in the consumption of the article.

## EUCLID.

1. If the angles at the base of a triangle be equal, the triangle is isosceles.

2. All the interior angles of any rectilineal figure together with four right angles are equal to twice as many right angles as the figure has sides.

3. Divide a given line into two parts so that the rectangle under the whole line and one part may be equal to the square of the other part.

## ALGEBRA.

1. Divide $(ay - bx)^2 + (ax + by)^2$ by $a^2 + b^2$.

2. Express in their simplest forms—

$$1 - \frac{(a-b)^2}{(a+b)^2}; \quad \frac{a+c}{(a-b)(a-a)}; \quad \frac{b+c}{(a-b)(a-b)}.$$

3. Solve the equations—

$$\frac{3x+9}{4} = \frac{5x+16}{7};$$

$$\frac{5}{x} - \frac{3}{a+1} = \frac{2}{a-1};$$

$$\sqrt{x-11} = 11 - \sqrt{x}.$$

## PEEL PRIZES IN GEOMETRY.—*Examiner,* Professor Purser.

1. If four straight lines be proportionals, the similar rectilineal figures similarly described on them are also proportionals.

2. Find the locus of a point such that the sum (or difference) of the areas it subtends in two given lines may be constant.

3. A transversal is drawn across the sides of a triangle. Investigate the relation existing amongst the segments into which it divides the sides.

4. Round a given quadrilateral circumscribe another similar to a given one.

5. Find the locus of a point such that the sum of its distances from two of the vertices of an equilateral triangle may be constantly equal to its distance from the third vertex.

6. The centre of the circle circumscribing a triangle, the intersection of the perpendiculars let fall from the angles on the opposite sides, and the intersection of the lines drawn from the angles to bisect the sides, lie indirect.

7. Four lines proceed from a point (O) and are cut by two lines drawn across them in the points PQRS, P'Q'R'S' respectively. Show that if POQ = SOR, and OQP OP'Q are each right angles, then OR'S is also a right angle.

8. On one circle X lies on the circumference of another circle Y; show that if any point A be taken on Y, from it a tangent be drawn to X meeting X again in B, from B another tangent to X meeting Y in C, from C another tangent to X meeting Y in D, then the line joining AD is also a tangent to X.

9. In a given triangle inscribe another of given species, one of whose sides shall pass through a given point.

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Appendix,
No. 2.
Scholarship
Examina-
tions.

## SCHOLARSHIP EXAMINATIONS.—OCTOBER.

### LITERARY SCHOLARSHIPS.—FIRST YEAR STUDENTS.

GREEK.—*Examiner*, Professor MacDowall.

I.—Translate the following lines from the *Ion* of EURIPIDES :—

> ὁ δὲ νεανίας
> σεμνὸν ἀπύγισας παρεβάλλε σκηνωμάτων
> ὀρθοστάτας Ἱππώθ',—ἤλιον ψολὰς
> καλῶς φυλάξας, οὔτε πρὸς μέσας θεοῦ
> ἀκτῖνας οὔτ' αὖ πρὸς τελευτώσας σταθείς·—
> πλῆθον σταθμήσας2 εἰς εὐγωνίαν3 μέτρον,
> ὡς πάντα Δολῶθν λαῖν ἐν θύσπερ τέκμαρ
> λαβὼν δ' ὑφάσματ'4 ἱρὰ θησαυρῶν5 πάρα
> κατεπέλαξε θαύμασ' ἀνθρώποισι ὁρᾶν.
> πρῶτον μὲν ὀρόφω6 πτέρυγα7 περιβάλλων πέπλων,
> ἀνάθημα6 Διὸς παιδός, οὓς Ἡρακλέης
> Ἀμαζόνων παιλέμας8 ἤνεγκεν θεῷ.
> ἐκεῖ δ' ἐνῆν ὑφαντὰ γράμμασιν τάδε
> ἠθρούσμῖν' ἄστρα πάντ' ἐν οὐρανοῦ κύκλῳ·
> Ἵππους μὲν ἤλαυν' ἐς τελευτώσαν φλόγα
> Ἥλιος ἐφέλκων λαμπρὸν Ἑσπέρου φάος,1
> μελάμπεπλος δὲ Νὺξ ἀσείρωτον3 ζυγοῖς
> ὄχημ'7 ἔπαλλεν.   ἄστρα δ' ὡμάρτει9 θεᾷ·
> Πλειὰς μὲν ἤει μεσσοπόρον3 δι' αἰθέρος
> ὅ τε ξιφήρης Ὠρίων, ὕπερθε δ'
> Ἄρκτος στρέφουσ' οὐραία3 χρυσέρων2 πόλον,
> (κύκλος δὲ πανσέληνος ἠγίντζ'2 ἄνω
> μηνὸς2 διχήρης3,) Ὑάδες τε ναυτίλοις6
> σαφέστατον σημεῖον, ἥ τε φωσφόρος
> Ἕως6 διώκουσ' ἄστρα.   τοίχοισιν δ' ἔπι
> ἡμπίσχεν3 ἄλλα, βαρβάρων ὑφ' θ' ὑφ' ἡμμέας
> εὐηρέτμους6 ναῦς ἀντίας Ἑλλησίναις,
> καὶ μειξοπάρθεν2 καὶ τετρασκελῆ2 φύσιν
> ἐλάφων τε διωγμὸν3 ἀγρίων θηράκασα·
> κατ' εἰσόδους δὲ Κέκροπα θυγατέρων πέλας
> σπείραισι εἰλ' ἐλίσσοντ',2 Ἀθηναίων τινὸς
> ἀνάθημα.

II.—1. Parse accurately every word to which the figure 1 is attached.

2. (*a*.) Derive or decompound every word to which the figure 2 is attached.   (*b.*) What remark do you make upon the quantity of *ι* in *Ὠρίων* and *ὁ* in *Ὑάδες* ?

3. (*a.*) State the two meanings of πλῆθον and the geometrical or arithmetical relation between the two.   (*b.*) What has been supposed to have suggested the figure or the dimensions of the tent sketched in the 6th line?

4. Briefly elucidate the expressions, Νὺξ ἀσείρωτον ζυγοῖς ὄχημ' ἔπαλλεν   and τελευτώσαν οὐραίαν χρυσέρων πόλον.

5. (*a.*) Among the stars here referred to, which one does not appear in the Homeric description of the Shield of Achilaus?   (*b.*) Can you mention two celestial signs which are noticed in Homeric texts but are absent in this passage?   (*c.*) What other name is given in both the *Ilias* and the *Odyssœa* as appropriated to *Arktos* ?   (*d.*) In what constellation did *Pleiades* and *Hyades* come to be associated ?

6. (a) State the limitations to which trisyllabic feet are subject in the trimeter iambics of tragedy, and (b) select instances of them from this passage.

I.—Translate the following remarks on Habits, whether generally prevalent or more or less distinctive :—

ἐπὶ τὰ κοινὰ ἤδη τῶν ἰδίων μαχρῷ διάστημεν, εἰ μή τις καταμάθοι, ἐξαπατηθῆσεται ὁ ἀνθρ. κοινὰ μὲν οὖν ἤδη πολιτικὰ καὶ τιμῶν,—οὐδὲν γὰρ ἤδη πολιτικὸν ὁ πᾶν ὁ ἀνθρ. ταύτῃ δὲ ἄλλας μὲν ἐστὶν οὖν ἄλλαι θησ, ἀλλ᾽ ἐπὶ τὸ αὐτὸ τὴν ἀναφορὰν Άγεσθαι. κόινὰ ἤδη, τρέφεσι, ἱγηγρηθίναι ἡμέρας, καθεύδειν νύκτωρ. προφάς χρῆσθαι, παύεσθαι κάμνοντας, δικνύειν ἐν σκιᾷ μὴ ὑπαίθριος. ἵνα δὲ ἤδη, ἃ καὶ ʼἴδνατʼ αλλήθων. ταύθ᾽ Ἑλλήνων μὲν ἔθν στέλωντα παρὰ θρηξὶ δʼ οὐχ ὁλγᾶς ταύτῃ καὶ παρὰ Πέραις οἱ ὁπλῖται, εὖ ἐγὼ παῖς πλᾶστ᾽ ἃ ετ᾽ τῶ μαπράχζει οἰεσθαν ίχθὰς δὲ πάντες ἰσθίωσιν ἀλλὰ Χόμων τινῶν τῶν τῆσ ʼΛατάρτησ σεβάρταιν θηρία δὲ καὶ πάντα τὰ ἰερκτὰ Αἰγύπτιο τὰς εἰδώλα θεῶν Αἰγυπτίων παῖδες μένοι τιμῶσι καὶ σέβονται, οἱ πάντες μόνοι τὰ αὐτά.

II.—Translate the following sentences in Attic, marking the accentuation :—

1. They have more pleasure in speaking ill of me than in praising themselves. 2. This man, from attaching the greatest importance to wealth, will subjugate his other desires. 3. It is not possible that the same person should at once know and not know the same things. 4. I should have heard that one ought to know letters. 5. I would that you had known him as I do. 6. Had they been prosperous, I don't know whether they would ever have brought themselves to be sensible. 7. Against all that might be with justice said against the city, neither should I be able to reply nor will I attempt to do so. 8. It is time not for deliberating further, but for having done with deliberation. 9. The difficulty of obtaining one's livelihood both breaks off intimacies and turns relationships into hostility. 10. He would order some one of his principal favourites to take the property of whoever did not repair to court, giving out that he was taking his own. 11. They were willing to send away the ships on some fair arrangement. 12. Strength with prudence is advantageous, but without this it more frequently injures those who possess it.

Translate :—

1. At Marius, ut supra dixmus, cupientissuma plebe consul factus, postquam ei provinciam Numidiam populus iussit, antea iam infestus nobilitati, tum vero multus atque ferox instare, singulos modo, modo universos laedere ; dictiare, sese consulatum ex violis illis spolia cepisse ; alia praeterea magnifica pro se, et illis dolentia. Interim, quae bello opus erant, prima habere ; postulare legionibus supplementum, auxilia a populis et regibus sociisque arcessere, praeterea ex Latio fortissumum quemque plerosque militiae, paucos fama cognitos accire ; et ambiundo cogere homines emeritis stipendiis secum profisci. Neque illi senatus, quamquam adversus erat, de illo negotio abnuere audebat ; ceterum supplementum etiam laetus decreverat, quia neque plebi militia volenti putabatur, et Marius aut belli usum aut studia volgi amissurum. Sed ea

res frustra sperata ; tanta libido cum Mario eundi plerosque invaserat.
Sese quisque praeda locupletem fore, victorem domum rediturum, alia
huiuscemodi animis trahebant.

SALLUST.—*Jug.*, 84.

(a.) Distinguish between *decernere*, *statuere*, *sciscere*, *jubere*, and *edi-
cere*; between *legem rogare*, *legem jubere*, *legem ferre*; between *plebs*,
*populus*, and *vulgus*. Derive and explain *infestus*.

(b.) Turn into Greek *multus insiture*; *plebs militia volenti putabatur*.
Explain accurately *audiendo*, and *emeritis stipendiis*. When, according
to Livy, did the Roman legionary first receive pay ?

(c.) What is the most probable explanation of the historical infini-
tive ? Enumerate the various English equivalents of the participle in
*rus*.

2. Multa in nostro collegio praeclara, sed hoc, de quo agimus, in pri-
mis, quod, ut quisque aetate antecedit, ita sententiae principatum tenet,
neque solum honore antecedentibus, sed iis etiam qui cum imperio sunt,
maiores natu augures anteponuntur. Quae sunt igitur voluptates cor-
poris cum auctoritatis praemiis comparandae ? Quibus equi splendide sui
sunt, ii mihi videntur fabulam aetatis peregisse nec tamquam inexerci-
tati histriones in extremo actu corruisse. At sunt morosi et anxii et
iracundi et difficiles senes, si quaerimus, etiam avari. Sed haec morum
vitia sunt, non senectatis. Ac morositas tamen et ea vitia quae dixi
habent aliquid excusationis non illius quidem iustae, sed quae probari
posse videatur. Contemni se putant, despici, illudi, praeterea in fragili
corpore odiosa omnis offensio est. Quae tamen omnia dulciora fiunt et
moribus bonis et artibus, idque quum in vita tum in scaena intelligi
potest ex iis fratribus qui in Adelphis sunt. Quanta in altero duritas,
in altero comitas ! Et sic res habet : ut enim non omne vinum, sic non
omnis natura vetustate coacescit. Severitatem in senectute probo, et
eam, sicut alia, modicam, acerbitatem nullo modo. Avaritia vero senilis
quid sibi velit non intelligo. Potest enim quidquam esse absurdius
quam, quo viae minus restet, eo plus viatici quaerere ?

CIC.—*Cato Major*, 18.

(a.) Distinguish between *aerius*, *severus*, and *morosus*; *contemnere*,
*despicere*, and *spernere*; *iratum esse* and *iracui*. Explain the use of the
pronoun in the phrase *non illus quidem iustae*.

(b.) Who are meant respectively by *honore antecedentes* and *qui cum
imperio sunt?* Define *collegium*, and explain the constitution of the
augural college at Rome.

Translate into Latin Prose:—

While the Capitol was building, says the legend, there came to the
king one day a withered old woman, carrying nine books of the pro-
phecies of the Sibyl, which she offered to sell for three hundred pieces
of gold. The king bade her go away, which she did ; but after burning
three of the books, she returned and asked the same price for the
remaining six. Again treated with scorn, she retired, burned other
three of the volumes and then came back demanding the same sum for
those which were left. Astonished at this conduct, the king consulted
the augurs, who assured him that in those nine books, six of which had
been lost, were contained the fates of the city and of the Roman people.
The three remaining volumes were accordingly purchased and deposited
in a stone chest, which was buried in the temple of Jupiter in the
Capitol.

Translate :

1. Ipse, peregrina ferrugine clarus et ostro,
    Spicula torquebat Lycio Gortynia cornu ;
    Aureus ex humeris sonat arcus, et aurea vati
    Cassida, fumet coccum chlamydemque sinusque crepantes
    Carbaseos fulvo in nodum collegerat auro,
    Pictus acu tunicas et barbara tegmina crurum.
    Huno virgo, sive ut templis praefigeret arma
    Troïa, captivo sive ut se ferret in auro,
    Venatrix unum ex omni certamine pugnae
    Caeca sequebatur, totumque incauta per agmen
    Femineo praedae et spoliorum ardebat amore :
    Telum ex insidiis quum tandem tempore capto
    Concitat et superos Arruns sic voce precatur :
    " Summe deum, sancti custos Soractis Apollo,
    " Quem primi colimus, cui pineus ardor acervo
    " Pascitur, et medium freti pietate per ignem
    " Cultores multa premimus vestigia pruna,
    " Da, pater, hoc nostris aboleri dedecus armis,
    " Omnipotens.    Non exuvias pulsaeve tropaeum
    " Virginis aut spolia ulla peto ; mihi cetera laudem
    " Facta ferent : haec dira meo dum vulnere pestis
    " Pulsa cadat, patrias remeabo inglorius urbes."
    Audiit et voti Phoebus succedere partem
    Mente dedit, partem volucres dispersit in auras.

    VIRG.—*Aen.* XI., 772–795.

(*a.*) Write a note on the epithets *Lycio, Gortynia.* Explain the construction *pictus—tunicas.*

(*b.*) Distinguish between *praeda, spolia, exuviae, manubiae.* Explain the formation of the perfect of *pasco.* Derive and explain *aboleo..*

(*c.*) Explain the following expressions : *pace sequestra ; dicere ; mussant ; futilis auctor ; quod scelus—Calydona merentem ; telisque volatile ferrum spargitur.*

2. Quando repostum Caecubum ad festas dapes,
        Victore laetus Caesare,
    Tecum sub alta - sic Iovi gratum - domo,
        Beate Maecenas, bibam,
    Sonante mixtum tibiis[2] carmen lyra,
        Hac Dorium, illis barbarum,
    Ut nuper, actus cum freto Neptunius[3]
        Dux fugit ustis navibus,
    Minatus Urbi vincla, quae detraxerat
        Servis amicus perfidis ?
    Romanus, eheu, - posteri negabitis -
        Emancipatus[4] feminae,
    Fert vallum et arma miles et spadonibus
        Servire rugosis potest,
    Interque signa turpe militaria
        Sol aspicit conopium[5] !
    Ad hunc[6] frementes verterunt bis mille equos
        Galli, canentes Caesarem,
    Hostiliumque navium portu latent
        Puppes sinistrorsum citae.

Io triumphe, tu moraris aureos
    Currus et intactas boves?
Io triumphe, nec Iugurthino parem
    Bello reportasti ducem,
Neque Africanum, cui super Carthaginem
    Virtus sepulcrum condidit!

                        Hor.—*Epod.*, IX., 1—26.

(*a.*) Write brief notes on the words to which numerals are attached.

(*b.*) What is the meaning of the word *Epode?* How has it been extended by Horace?

3. Dic, age, frigoribus quare novus incipit annus,
    Qui melius jam ver incipiendus erat?
Omnia tunc florent, tunc est nova temporis aetas,
    Et nova de gravido palmite gemma tumet,
Et modo formatis operitur frondibus arbos,
    Prodit et in summum seminis herba solum,
Et tepidum volucres concentibus aëra mulcent,
    Ludit et in pratis luxuriatque pecus.
Tum blandi soles, ignotaque prodit hirundo,
    Et luteum celsa sub trabe fingit opus;
Tum patitur cultus ager et renovatur aratro,
    Haec anni novitas jure vocanda fuit.

                        Ovid.—*Fasti*, I., 149—161.

HISTORY AND THE ENGLISH LANGUAGE.—*Examiner, Professor Yonge.*

QUESTIONS.

1. What were the circumstances under which Waltheof, Wallace, Lord Cobham, and the Duke of Suffolk were put to death?

2. Give a list of the kings of England between the Conquest and 1509, distinguishing those who inherited the crown from their fathers, and those who obtained it in any other manner: and explaining the nature of the rights or pretensions of those who did not inherit from their fathers.

3. What king of England, during the same period, distinguished them, selves most by opposition to the Papal power?

4. What were the chief provisions of Magna Charta? Was it wholly a novel enactment? Was any proof given of the estimation, favourable or unfavourable, in which it was regarded in subsequent reigns?

5. Give a sketch of the life and character of Louis IX. of France.

6. What were the States General of France? Who established them? What was the composition, and what were the duties of the French Parliament?

7. What kings of France were most mixed up with the history of England? Give particulars of the circumstances under which those kings became thus connected with England.

8. Who were Hugh de Burgh, Simon de Montfort, the Duke of Bedford, Dunois, du Guesclin, and Etienne Marcel.

SUBJECT OF ESSAY.

THE DIFFERENCE, IN OBJECT AND USE, BETWEEN THE STUDY OF POETRY AND OF PROSE LITERATURE.

### SECOND YEAR STUDENTS.

GREEK.—*Examiner*, Professor MacDOUALL.

I.—Translate the following lines from the VIIIth Book of the *Ilias*:—

ὣς οἳ διαπρήσσον᾽ Δαναῶν γεγαώς·"
"αἰδὼ, Ἀργεῖοι, κάκ᾽ ἐλέγχεα, εἶδος ἀγητοί·¹
ᾗ μέν᾽ ἐφάμεθ᾽ εὐχωλαῖ,—ὅτε δὴ μόνον ἄρατε,"
πῇ ποτ᾽ ἐπὶ Λημνῳ κενεαυχέες ἠγοράασθε,¹
[ἐσθίοντες²] κρέα πολλὰ βοῶν ὀρθοκραιράων,²
πίνοντες κρητῆρας ἐπιστεφέας οἴνοιο,
Τρώων ἄνθ᾽ ἑκατόν τε διηκοσίων τε ἕκαστος
στήσεσθ᾽ ἐν πολέμῳ· νῦν δ᾽ οὐδ᾽ ἑνὸς ἄξιοί εἰμεν,¹
[ὡ πάτερ] ἦ ῥά τιν᾽ ἤδη ὑπερμενέων βασιλήων
ᾗδ᾽ ἄτῃ ἄασας² καὶ μιν μέγα κῦδος ἀπηύρας;²
οὐ μὲν δή ποτέ φημι τεὸν περικαλλέα βωμὸν¹
νηὶ πολυκλήιδι² παρελθέμεν ἐνθάδε ἔρρων,
ἀλλ᾽ ἐπὶ πᾶσι βοῶν δημὸν καὶ μηρί᾽ ἔκηα¹
ἱέμενος² Τρώων εὐτείχεον ἐξαλαπάξαι.
ἀλλά, Ζεῦ! τόδε πέρ μοι ἐπικρήηνον² ἔελδωρ·
αὐτοὺς δή περ ἔασον ὑπεκφυγέειν καὶ ἀλύξαι,²
μηδ᾽ οὕτω Τρώεσσιν ἔα δάμνασθαι² Ἀχαιούς."
ὣς φάτο· τὸν δὲ πατὴρ ὀλοφύρατο δάκρυ χέοντα,¹
νεῦσε δέ οἱ λαὸν σόον ἔμμεναι οὐδ᾽ ἀπολέσθαι.²
αὐτίκα δ᾽ αἰετὸν ἧκε τελειότατον πετεηνῶν¹
νεβρὸν ἔχοντ᾽ ὀνύχεσσι² τέκος ἐλάφοιο ταχείης·²
πὰρ δὲ Διὸς βωμῷ περικαλλέι κάββαλε² νεβρόν,
ἔνθα πανομφαίῳ² Ζηνὶ ῥέζεσκον¹ Ἀχαιοί.

II.—1. (a.) Parse fully the words to which the figure 1 is attached, subjoining the Attic counterparts which differ from the Homeric.
(b.) Distinguish φάμεν from φαμέν, ἀνθ᾽ from ἀνθ᾽, ἀπολέσθαι from ἀπολείσθαι, and show how the clauses to which they belong are to be rendered when the former variants are substituted for the latter.

2. Decompound the words to which the figure 2 is attached.

3. Restore lapsed letters (such as Ϝ, σ, &c.,) to words which you believe to have retained them in Homeric usage.

4. Adduce parallels from other books of the *Ilias* to the phrases in vss. 2, 3, 6, 10, 13, 15, 20.

I.—Translate the following sentences from XENOPHON's *Anabasis*:—

ὑμῖν μετὰ δ᾽ ἐμοὶ ἴδιᾳ ὑπισχετο Ξεῖθιγ ξένι, μηδὲ ἂ οἱ ἄλλοι στρατηγοὶ Παθον
συντάξαι μηδὲν μοι καταπράξασθαι πρὸ τοῦ· καὶ τί δὴ τοῦτ᾽ ἐποίουν; ὅμησι, ὦ
φίλτατε ἀνδρῶν, μᾶλλον συμφέρωσ᾽ εαὐτοῦ τὴν τότε ὥραν· τοσούτῳ μᾶλλον αὐτῶν φίλον
πονηρότερ ἐστὶν δυνατώτεροι. ἐγὼ δὲ ἥμα τε αὐτὸν ἐφ᾽ οἳ ἤράττοντο καὶ γιγνώσκω δι᾽
αὐτὸ τήν ὑμῶν. ἀπὼ δἐ τις ἔα, "οὐκοῦν αἰσχύνη οὕτω μωρὸς [ἐξαπατώμενος;]"
ναὶ μὰ Δία ἠσχυνόμην ἄν μέντοι, εἰ ὑπὸ πολεμίου γε ὄντος ἐξηπατήθην· φίλῳ δ᾽ ὄντι
ἠσχυνόμην τὸ ὑπὸ τούτου ἐξαπατηθῆναι. ἐπεί, εἰ γε πρὸς φίλους τοσαὐτη ἡμῖν
πᾶσιν οἶδα δεῖσε ϕυλακτεαῶν εἶναι, μή ποραρέχῃ τωτὠν πρόφασιν δικαίαν μηδὲ ἡμετέραις
ἡμῖν δι᾽ ὑπισχνεσ᾽ οὔτε γὰρ ἐθελήσαιμι τούτων οὐδὲν οὔτε κατεβλακεύσαμεν τὰ
τούτου· οὐδὲ μὴν κατεβλακεύσομεν αὐτοῦ· ἔτει ὁ ἀνδρὶ βελτίων εἶναι· μηδὲ
ψαίην ἄν, "ἔστω τὴν ἀνέχομαι τόν λαβεῖν, ὣς μοί· εἰ βραδύτερ ἔδοντιν ἱκανῶν." πρὸς
τοὐναντίον ὁ ξενῶντος ὁ δ᾽ εἶπεν ὅσα ὑπὸ τῶν τοιούτ ἀναφτνιὴν, εἰ μὴ μωι τοιοντένὴ
ἀρθμώμενος ἐλοκίστ᾽ εἶναι ἣ λίαν εἰς τὴν ἐμὰ ἀχθηρετι.

II.—Render the following passage in Attic prose :—

There is to my mind no finer specimen of moral grandeur than that presented by him who first resolved to read and comprehend the heavens. On some lofty peak he stood in the stillness of the midnight hour, with the listening witnesses of his vows and there, conscious of his high destiny and of that of himself, resolved to commence the work of ages. "Here," he exclaimed, "is my watch-tower, and yonder bright orbe are henceforth my solitary companions. Night after night, year after year, will I watch and wait, ponder and reflect, until some ray shall pierce the deep gloom which now wraps the world."

I.—Translate the following stanzas from the *Hippolytos* of EURIPIDES :—

> οὐκέτι γὰρ καθαρὰν φρὴν᾿ ἔχω τὰ παρ᾿ ἐλπίδα λεύσσων,      στρ.
> ἰδοῦ τὸν ῾Ελλανίας²
> φανερώτατον ἀστέρα γαίας
> εἴδομεν εἴδομεν ἐκ πατρὸς ὀργᾶς³
> ἄλλαν ἐπ᾿ αἶαν ἱέμενον.⁴
> ὦ ψάμαθοι⁵ πολιήτιδος⁶ ἀκτᾶς⁵
> δρυμός τ᾿ ὄρεος, ὅθι⁷ κυσὶν
> ὠκυπόδων μέτα θῆρ᾿ ὁ ἔναιρεν⁸
> Δίκτυνναν⁹ ἀμφὶ σεμνάν.¹
> οὐκέτι συζυγίαν¹ πώλων¹ Ἐνετᾶν ἐπιβάσει¹      ἀντιστρ.
> τὸν ἀμφὶ λίμνας τρόχον²
> κατέχων σοὶ γυμνάδος¹ ἵππον.
> μοῦσα δ᾿ ἄυπνος³ ἐπ᾿ ἄντυγι⁴ χορδᾶν²
> λήξει πατρῷον ἀνὰ δόμον·
> ἀστέφανοι δὲ κόρας ἀνδανάλοι
> Λατοῦς βαθεῖαν ἀνὰ χλόαν⁶
> νυμφιδίων⁷ δ᾿ ἀπόλωλε φυγᾷ σᾶ
> λέκτρων ἅμιλλα κούραις.
> ἐγὼ δὲ σᾷ δυστυχίᾳ δάκρυσι διοίσω⁶      ἐπῳδός.
> πότμον ἄποτμον· ὦ τάλαινα
> μᾶτερ¹ ἔτεκες ἄρ᾿ ἀνόνατα.¹
> φεῦ φεῦ¹ μανίω θεοῖσιν.
> ἰὼ ἰὼ συζύγιαι¹ Χάριτες¹
> τί τὸν τάλαν᾿ ἐκ πατρίας γῆς
> τὸν οὐδὲν ἄτας αἴτιον πέμπετε τῶνδ᾿ ἀπ᾿ οἴκων ;

II.—1. Parse fully and accurately the words to which the figure 1 is attached, noticing the quantity of the ι in μανίω and ἱέμενον and the accentuation of συζυγίαι and κούραις.

2. Derive or decompound the words to which the figure 2 is attached.

3. Point out various Doric flexions exemplified above, but distinguish also some Ionic and Attic flexions.

4. Elucidate vss. 6, 7, 9, 10, 11, adducing parallel passages from this drama.

LATIN.—*Examiner*, Professor NESBITT.

Translate :—

Hanc vero quaestionem, etsi non est iniqua, numquam tamen senatus constituendam putavit. Erant enim leges, erant quaestiones vel de caede vel de vi, nec tantum maerorem ac luctum senatui mors P. Clodii adfere-

bat, ut nova quaestio constitueretur. Cuius enim de illo incesto stupro *Appendix.* iudicium decernendi senatui potestas esset erepta, de eius interitu quis *No. 3.* potest credere senatum iudicium uorum constituendum putasse? Cur igitur incendium curiae, oppugnationem aedium M. Lepidi, caedem hanc *Examina-* ipsam contra rem publicam senatus factam esse decrevit? Quia nulla *vix* *tionem.* umquam est in libera civitate suscepta inter cives non contra rem publicam. Non enim est illa defensio contra vim umquam optanda, sed non nunquam est necessaria. Nisi vero uut ille dies, quo Ti. Gracchus est caesus, aut ille, quo Caius, aut arma Saturnini non, etiam si cera publicam oppressa sunt, rem publicam tamen vulnerarunt. Itaque ego ipse decrevi, quum caedem in Appia factam esse constaret, non eum, qui se defendisset, contra rem publicam fecisse, sed, quum inessent in re vis et insidiae, crimen iudico reservavi, rem notavi. Quod si per furiosam illam tribunum senatri quod sentiebat perficere licuisset, novam quaestionem nullam haberemus. Decernebat enim, ut veteribus legibus tantum modo extra ordinem quaereretur. Divisa sententia est postulante nescio quo: nihil enim necesse est omnium me flagitia proferre. Sic reliqua auctoritas senatus empta intercessione sublata est.

*Cic.—pro Mil.*, c. 5., § 13, 14.

(a.) Describe the *quaestiones perpetuae.* When and by whom were they instituted? Under what laws could Milo have been arranged?

(b.) Write notes upon *oppugnationem aedium M. Lepidi ; ego ipse ;* and *arma Saturnini.* What is the force of the imperfect *decernebat ?*

(c.) What were the two clauses of the *sententia* referred to, and to which of them did the veto apply? Name the *tribunus furiosus.*

2. Postea vero quam Hortensius exsogitavit, ut legem de religione Fufius tribunus pl. ferret, in qua nihil aliud a consulari rogatione differebat nisi iudicum genus—in eo autem erant omnia—pugnavitque, ut ita fieret, quod et sibi et aliis persuaserat nullis illum iudicibus effugere posse, contraxi vela perspiciens inopiam iudicum, neque dixi quidquam pro testimonio, nisi quod erat ita notum atque testatum, ut non possem praeterire. Itaque si causam quaeris absolutionis, ut iam πρὸς τὸ πρότερον revertar, egestas iudicum fuit et turpitudo. Id autem ut accideret, commissum est Hortensii consilio, qui cum veritus est ne Fufius ei legi intercederet, quae ex senatus consulto ferebatur, non vidit illud, satius esse illum in infamia relinqui ac sordibus quam infirmo iudicio committi. Sed ductus odio properavit rem deducere in iudicium, quum illum plumbeo gladio iugulatum iri tamen diceret. Sed iudicium si quaeris quale fuerit, incredibili exitu, sic, uti nunc ex eventu ab aliis, a me factum ex ipso initio consilium Hortensii reprehendatur. Nam ut rejectio facta est clamoribus maximis, quum accusator umquam recusaret bonos homines nequissimos reiiceret, reus tamquam clemens lanista frugalissimum quemque secerneret, ut primum iudices consederunt, valde diffidere boni coeperunt. Non enim umquam turpior in ludo natione consessus fuit. Maculosi senatores, nudi equites, tribuni non tam aerati quam, ut appellantur, aerarii. Pauci tamen boni inerant, quos rejectione fugare ille non potuerat, qui maesti inter sui dissimiles et quaerentes sedebant et contagione turpitudinis vehementer permovebantur.

*ad Attic.*, I, 16, 2, 3.

Explain the allusion in πρὸς τὸ πρότερον. How did the proposal of Fufius differ from the rogation of the Consuls? When and under what law were the *tribuni aerarii* admitted to the *judicia* ? Explain the force of *tamen* in *quum—tamen diceret.*

3. Translate into Latin Prose :—

Whenever the trumpet gave the signal of departure, the camp was instantly broken up, and the troops fell into their ranks without delay or confusion. Besides their arms, which the legionaries scarcely considered as an encumbrance, they were laden with their kitchen furniture, the instruments of fortification and the provisions of many days. Under this weight, which would oppress the delicacy of a modern soldier, they were trained to regular steps to advance, in about six hours, near twenty miles. On the appearance of an enemy, they threw aside their baggage, and by easy and rapid evolutions converted the column of march into an order of battle. The slingers and archers skirmished in the front; the auxiliaries formed the first line, and were seconded or sustained by the strength of the legions; the cavalry covered the flanks, and the military engines were placed in the rear.

Translate :—

1. Aɴ. Adeon rem redisse, ut qui mihi consultum optume uelit esse,
    Phaedria, patrem ut extimescam, ubi ueniat in mentem eius
        aduenti?
    Qui non fuissem inoegitans, ita [eum] expectarem, ut par fuit.
  Pʜ. Quid istuc? Aɴ Rogitas? qui tam audacis facinoris mihi con-
        scius sis?
    Quod utinam ne Phormioni id suadere in mentem incidisset
    Neu me cupidum eo impulisset, quod mihi principiumst mali!
    Nou potitus essem : fuisset tum illos sei aegre aliquot dies :
    At non cotidiana cura haec angeret animum.    Pʜ. Audio.
  Aɴ. dum expecto quam mox ueniat qui hanc mihi adimat consuetu-
        dinem.'
  Pʜ. Aliis quia defit quod amant aegrest : tibi quia super est dolet.
        Amore abundas, Antipho.
    Nam tua quidem hercle certo uita haec expetenda optandaquest.
    Ita me di bene ament, ut mihi liceat tam diu quod amo frui,
    Iam depeciaci morte cupio ; in concidio cetere,
    Quid ego ex hac inopia nunc capiam, et quid tu ex istac copia,
    Vt ne addam, quod sine sumptu ingenuam, liberalem nactus es,
    Quod habes, ita ut uolusti, uxorem sine mala fama palam :
    Beatus, ni unum desit, animus qui modeste istaec ferat,
    Quod si tibi res sit cum eo lenoue quocum mihist, tum sentias.
    Ita plerique omnes sumus ingenio, nostri nosmet paenitet.
                                    Teʀ.—*Phorm.*, II., 1, 2—30.

(a.) Explain the construction *ejus adventi venit in mentem.*

(b.) Scan the first three lines.

2. Κεινὰ φίλαυ haec sunt, haec sunt tua, Candide, κενὰ,
        Quae tu magniloous nocte dieque sonas :
    Te Lucedammonio velat toga leta Galaeso
        Vel quam saepositɔ de grege Parma dedit,
    At me quae passa est furias et cornua tauri,
        Noluerit dici quam pila prima suam.
    Misit Ageroreas Cadmi tibi terra lacernas :
        Non vendes nummis coccina nostra tribus.
    Tu Libycos Indis suspendis dentibus orbes :
        Fulcitur testa fagina mensa mihi.

Immodici tibi flava tegent chrysendeta mulli :
Concolor in nostra, cammare, lance rubes.
Grex tuus Iliaco poterit certare cinaedo,
At mihi secretum pro Ganymede manus.
Ex opibus tantis veteri fidoque sodali
Das nihil et dicis, Candide, *κοινὰ φίλων* ?

MARTIAL—*Epigr.* II., 44.

(*a.*) Write brief notes on any word or phrase which you think requires illustration.

(*b.*) When did Martial flourish? Describe the structure of his Epigrams. Can he be regarded as its inventor?

3. Quid vetat et stellas, ut quaeque oriтурeue cadíтque,
Dicere? promissi pars fuit ista mei.
Felices animae, quibus haec cognoscere primis
Inque domos superas scandere cura fuit.
Credibile est illos pariter vitiisque locisque
Altius humanis exseruisse caput.
Non Venus et vinum sublimis pectora fregit,
Officiumve fori, militiaeve labor ;
Nec levis ambitio, perfusaque gloria fuco,
Magnarumve fames sollicitavit opum.
Admovere oculis distantia sidera nostris,
Aetherque suum supposuere suo.
Sic pretium caelum, non ut ferat Ossan Olympus,
Summaque Pelineus sidera tangat apex.
Nos quoque sub ducibus caelum metabimur illis,
Ponemusque suos ad vaga signa dies.

OVID—*Fasti.* 1. 295-310.

4. Translate into Latin Hexameters :

The city which thou seest no other deem
Than great and glorious Rome, queen of the earth,
So far renowned, and with spoils enriched
Of Nations. There the Capitol thou seest
Above the rest lifting his stately head,
On the Tarpeian rock, her citadel
Impregnable ; and there Mount Palatine,
The imperial palace, compass huge and high
The structure, skill of noblest architects,
With gilded battlements conspicuous far,
Turrets and terraces and glittering spires.

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### THE ENGLISH LANGUAGE.—*Examiner, Professor Yonge.*

#### QUESTIONS.

1. Describe the different stages of the language used in Britain before it assumed its present form, having been spoken of by different writers, as Saxon, Anglo-Saxon, Semi-Saxon, &c. Explain the meaning and analyse the correctness of this classification.

2. During the 12 first centuries of the Christian Era, Britain was invaded and subdued by several foreign nations. Enumerate the principal conquests of the island, and mention any traces left by those conquests on the language of the country.

3. What are the characteristics which expressly distinguish the modern languages of Europe from the ancient classical languages? And are these distinctions more or less visible in English than in other modern languages; than, for instance, in French?

4. Dr. Latham says, "the laws of Syntax are neither more nor less than the dictates of common sense applied to language." Comment on this assertion.

5. What are *transitive* and *intransitive* verbs? Is there in some instances a disposition to confuse them? In such sentences as, I move, I strike, to what class do these verbs belong?

6. The literature of England is sometimes distinguished by periods. Critics speak of the early writers; the writers of the Elizabethan age; the writers of the Reformation; of the age of Anne, &c. Mention one or two of the greatest writers of the different periods of English history, and their principal works and characteristics.

7. What are the qualities required to constitute a poet and a prose writer of the highest class? What are the chief points of difference in these qualities?

8. How many English writers have attained a high reputation for both prose and poetry? If any have done so, mention and describe them.

## SUBJECT OF ESSAY.

The Characteristics of the English Drama and Dramatists, as compared or contrasted with those of other Nations.

## MODERN LANGUAGE.—*Examiner*, Professor *Meissner.*

### FRENCH.

Translate into French?

I. Architecture differs from the other four great Arts in one remarkable particular. Poetry, Music, Sculpture, and Painting, can and ought always to be exercised purely for their own sakes and not for any ulterior purpose. But this great principle is found hard to reconcile with the necessities of Architecture. The number of buildings which are erected mainly as works of Art, must always be trifling compared to those constructed for definite utilitarian purposes. We build houses, fortresses, churches, that we may dwell in them, use them for military operations, perform in them religious services; but not mainly or primarily to create works of architectural Art. Indeed, the edifices which may be considered purely artistic are not at first sight easily discoverable. Almost every building has another purpose beside Art. A man makes a poem, a piece of music, a statue, or a picture, because he wishes to express something beautiful, and (if he be a true artist) for no other reason. But very rarely indeed does any one erect an edifice, large or small, without having in view some other purpose beside expressing beauty in the abstract. Some want must be supplied, some event recorded, some convenience attained, by almost every building which men think of constructing.—F. P. Cobbe.

Translate into English?

II. Il était bien tard lorsque je m'éveillai de mon profond sommeil; j'avais dormi douze heures de suite comme une seconde, et la première chose que

je vis, ce feront mes petites vitres rondes couvertes de ces fleurs d'argent, de ces toiles transparentes et de ces mille ornements de givre, tels que la main de nul ciseleur ne pourrait en dessiner. De tout pourtant qu'une simple pensée de Dieu, qui nous rappelle le printemps au milieu de l'hiver ; mais c'est aussi le signe d'un grand froid, d'un froid sec et vif qui succède à la neige ; alors toutes les rivières sont prises et même les fontaines, les sentiers humides sont durcis et les petites flaques d'eau couvertes de cette glace blanche et frisible qui craque sous les pieds comme des coquilles d'œuh.

En regardant cela, le nez à peine hors de ma couverture et le bonnet de coton tiré jusqu'au nez à la mauresque, je revoyais tous les hivers passés et je me disais : " Fritzel, tu n'oseras jamais te lever, pas même pour aller déjeuner, non, tu n'oseras pas !"—ERCKMANN CHATRIAN.

Translate :—

III. Mais, sans errer en vain dans ces vagues propos,
Et pour rimer ici ma pensée en deux mots,
N'en déplaise à ces fous, nommés sages de Grèce,
De ce monde il n'est point de parfaite sagesse ;
Tous les hommes sont fous, et, malgré tous leurs soins,
Ne diffèrent entre eux que du plus ou du moins.
Comme on voit qu'en un bois que cent routes séparent
Les voyageurs sans guide assez souvent s'égarent,
L'un à droit, l'autre à gauche, et courant vainement,
La même erreur les fait errer diversement :
Chacun suit dans le monde une route incertaine,
Selon que son erreur le joue et le promène ;
Et tel y fait l'habile et nous traite de fous,
Qui sous le nom de sage est le plus fou de tous.
Mais quoi que sur ce point la satire publie,
Chacun veut en sagesse ériger sa folie,
Et, se laissant régler à son esprit tortu,
De ses propres défauts se fait une vertu.
Ainsi, cela soit dit pour qui veut se connaître
Le plus sage est celui qui ne pense point l'être.

BOILEAU—*Satire IV.*

II. Philological Questions.

(a) What is the great law of the permutation of the Mutæ in the Romance languages ?

(b) Explain what is meant by *diphthongation.*

(c) Describe the double process by which French words are derived from Latin, and give at least six examples of two modern words derived from the same etymon.

## GERMAN.

Translate into German :

I. A messenger has brought a letter. He will be obliged to obey. Open the window. The estate has been sold. The board is ten feet long and fifteen inches broad. As the railway-train had been detained by an accident, the letters arrived three hours later than usual. I shall take an umbrella for it is going to rain.

II. The battle of Hastings, and the events which followed it, not only placed a Duke of Normandy on the English throne, but gave up the whole population of England to the tyranny of the Norman race. The subjugation of a nation by a nation has seldom, even in Asia, been more

The country was portioned out among the captains of the
invaders. Strong military institutions, closely connected with the insti-
tution of property, enabled the foreign conquerors to oppress the children
of the soil. A cruel penal code, cruelly enforced, guarded the privileges,
and even the sports of the alien tyrants. Yet the subject race, though
beaten down and trodden under foot, still made its sting felt.—MACAULAY.

Translate into English:—

III. Götz. Ich reimeme mich just lebend, wie der Landgraf von Hanau eine Jagd
gab, und die Fürsten und Herrn sie jagten waren unter freiem Himmel heiß'ten, und
das Landvolk all herbei lief zu zu sehen. Das war feine Maskerade, die er sich selbst zu
Ehren angestellt hatte. Aber die vollen runden Köpfe der Burschen und Mädel, die rothen
Backen alle, und die wohlblühen Männer und stattlichen Greise, und alles fröhliche
Gesichter, und wie sie Theil nahmen an der Herrlichkeit ihres Herrn, der auf Gottes
Boden unter ihnen sich ergötzte!

Georg.    Das war ein Herr, vollkommen wie ihr.

Götz.    Sollten wir nicht bessen das mehr leichte Fürsten auf einmal herrschen können?
daß Verehrung der Kaiser, Friede und Freundschaft der Nachbarn, und Lieb der Unter-
thanen, der köstlichste Familienschatz sein wüll, der auf Enkel und Urenkel erbt? Jeder
würde das seinige erhalten und in sich selbst vermehren, daß daß sie jetzo nicht zuzunehmen
glauben, wenn sie nicht andere verderben.—GOETHE.

Lionel.

IV. Mädchen, sahst wohl!    Der Thränen schuldigen Zoll
Will ich euch redlich nach der Schlacht entrichten,
Wenn ich alsdann noch übrig bin.    Jetzt aber
Reißt das Geschick mich fort, und auf das Schlachtfeld
Nach nächstem Sieg um seine Loose zählsch't.
Auf Wiedersehn in einer andern Welt!
Kurz ist der Abschiede für die lange Freundschaft.

Talbot.

Bald ist's vorüber, und der Erde geb' ich,
Der ew'gen Sonne die Atome wieder,
Die sich zu Schmerz und Lust in mir gefügt—
Und von dem mächt'gen Talbot, der die Welt
Mit seinem Kriegsruhm füllte, bleibt nichts übrig,
Als eine Handvoll leichten Staube.—So geht
Der Mensch zu Ende—und die einzige
Ausbeute, die wir vom Kampf des Lebens
Wegtragen, ist die Einsicht in das Nichts
Und herzliche Verachtung alles dessen,
Was uns erhaben schien und wünschenswerth.—SCHILLER.

## SCIENCE SCHOLARSHIPS.—FIRST YEAR STUDENTS.

MATHEMATICS.—*Examiner*, Professor Purser.

### ALGEBRA AND ARITHMETIC.

1. A stone is let fall from a tower and in the last second before it reaches the ground it falls 100 feet. Assuming that the stone falls from rest in any given time through a number of feet equal to 16 times the square of the number of seconds it has been falling, find the height of the tower.

2. The radii of two circles are 2 and 9 and the distance between their centres 13, calculate to two decimal places the lengths of their common tangents.

3. A vessel contains 100 gallons of wine. A gallon is drawn 100 times successively and each time replaced by a gallon of water, what proportion of wine remains in the vessel.

$$\log 3 = 0.4771213 \qquad \log 11 = 1.0413927$$
$$\log (36.604) = 1.56353$$

4. Show by raising 3 to its powers that $\log_m(3)$ lies between $\frac{11}{23}$ and $\frac{10}{21}$ and hence write down a number which shall not differ from the true value of this logarithm by so much as ·0011.

5. Solve the equations—

$$(a+x)^{\frac{1}{3}} + (a-x)^{\frac{1}{3}} = a^{\frac{1}{3}},$$
$$\sqrt{\frac{m+x}{n+x}} + \sqrt{\frac{m-x}{n-x}} = 2 \ \sqrt{\frac{m}{n}}.$$

6. Given $\left(\frac{x}{y} + \frac{y}{x}\right)(x+y) = a, \ \frac{x}{y} + \frac{y}{x} = b,$ find $x$ and $y$.

7. Suppose $x + y$ remain constant, when is $\frac{1}{x} + \frac{1}{y}$ least, $x$ and $y$ being always positive.

8. Write down the expansion of $(1+x)^n$. Prove that the sum of the coefficients of any two consecutive powers of $x$ in this expansion is the coefficient of the higher power of $x$ in the expansion of $(1+x)^{n+1}$. Calculate the coefficient of $x^5$ in $(1 + 3x^2 - 2x^3)^4$.

9. Four quantities are in geometric progression and the sum of the extremes=twice the sum of the means. Find the common ratio.

10. Show that if $\frac{\cos\theta}{\cos a} + \frac{\sin\theta}{\sin a} = 1$, then $\frac{\cos a}{\cos\theta} + \frac{\sin a}{\sin\theta} = 1$, unless $\theta = a$.

### GEOMETRY AND TRIGONOMETRY.

1. Construct an isosceles triangle having each angle at the base double the vertical angle.

2. Given all the sides of a quadrilateral, shew that its area is greatest when it can be inscribed in a circle.

3. A variable circle passes through two fixed points OO′ let PQ be its points of intersection with a fixed circle, and let OP OQ meet the latter again in P′Q′. Shew that P′Q′ passes through a fixed point.

4. From any point P in the base A B of a semicircle two lines P Q, P R are drawn making the angles Q P A, P R B equal, shew that the triangles Q P A, R P B are similar.

5. Express sin $\beta$ in terms of sin $a$.

6. Investigate the relation amongst the tangents of three angles which together make 90°.

7. Prove the formula      $\sin \frac{1}{2}A = \sqrt{\dfrac{(s-b)(s-c)}{bc}}$.

Given base and the difference of the other two sides of a triangle show that the rectangle under the perpendiculars dropped from the extremities of the base on the internal bisector of the vertical angle is also given.

8. Prove the expression for the area of a triangle in terms of one side and the adjacent angles

$$\text{area} = \frac{1}{2} a^2 \frac{\sin B \sin C}{\sin(B + C)}.$$

9. In any triangle

$$\sin \frac{A}{2} \sin \frac{B}{2} \sin \frac{C}{2} = \frac{r}{4R},$$

when R, r are the radii of the circumscribed and inscribed circles.

10. Reduce $1 - \sin^2 A - \sin^2 B - \sin^2 C = 2 \sin A \sin B \sin C$ to the product of four cosines multiplied by a numerical factor.

11. Show that if $a = b \cos \theta + c \sin \theta$

$$b = a \cos \theta + d \sin \theta$$

then either $a^2 + b^2 = 0$ and $\sin d = 0$

or        $a^2 + d^2 + b^2 + c^2$ and $\theta = \tan^{-1} \dfrac{d}{a} = \tan^{-1} \dfrac{b}{c}$.

12. If three lines be drawn across a triangle, each of them making equal angles with a pair of sides and at the same time dividing the area into two equal parts, prove that $a^2 \beta^2 + \beta^2 \gamma^2 + \gamma^2 a^2 = 4 \, \Delta^2$ where $a, \beta, \gamma$ are the lengths of these lines and $\Delta$ is the area of the given triangle.

## SECOND YEAR STUDENTS.

MATHEMATICS.—*Examiner, Professor Purser.*

1. If two circles are so disposed that a quadrilateral (neither pair of whose opposite sides intersect without production) can be inscribed in the first and circumscribed in the second.

$$\frac{1}{(R - \delta)^2} + \frac{1}{(R + \delta)^2} = \frac{1}{r^2}.$$

When R, r are the radii of the circles $\delta$ the distance between their centres.

2. Assuming De Moivre's theorem expand cos $\theta$ in terms of $\theta$.

How would you represent geometrically the sum of the series—

$$1 - \frac{1}{1.2} + \frac{1}{1.2.3.4} + \&c. \text{ ad inf.}$$

3. Calculate $\pi$ to five places of decimals proving the formula employed.

4. Given $a \cos \theta + b \cos \phi$. Prove that $a \sin \theta + b \sin \phi$ is greatest when $\theta + \phi = \pi$ ($a$ and $b$ being both positive).

Apply this to find the quadrilateral of given sides and maximum area.

5. If a solid angle be contained by three plane angles, any two of them are together greater than the third.

6. Given base and area of a spherical triangle, find locus (1) of vertex, (2) of the middle point of either side.

7. From two points A, B on the surface of the sphere, arcs of great circles A'A, BB' are drawn perpendicular to a given great circle. Prove that—

$$\frac{\sin A B'}{\sin A'B} = \frac{\sin A B \cos \theta}{\cos A A' \cos BB'}$$

Where $\theta$ = angle between the great circles AB, A'B'.

8. Prove the formula—

$$\tan\tfrac{1}{2}(A - B) = \frac{\sin\tfrac{1}{2}(a - b)}{\sin\tfrac{1}{2}(a + b)} \cot\tfrac{1}{2} C.$$

9. Eliminate $\phi$ from the equations

$$x - \cos^2\phi = 3 \cos\phi \sin^2\phi$$
$$y - \sin^2\phi = 3 \sin\phi \cos^2\phi$$

10. If $\dfrac{p}{q}$, $\dfrac{p'}{q'}$ are two consecutive convergents to a continued fraction, prove that $pq' - p'q = \pm 1$, and that the error induced by stopping at the convergent $\dfrac{p}{q}$ is less than $\dfrac{1}{qq'}$.

Express $\sqrt{7}$ as a continued fraction, and calculate the first 5 convergents.

11. Solve the cubic

$$4x^3 - 21 x + 172 = 0.$$

12. Explain fully how, having first calculated the modulus and the logarithms of 2, 3, 7, 11 and 13 you would proceed to calculate a complete table of logarithms.

## CO-ORDINATE GEOMETRY.

1. Find the equation of a line passing through the intersection of two given lines and parallel to a third.

2. Find the length of the perpendicular let fall from the point $x'y'$ on the line $\dfrac{x}{a} + \dfrac{y}{b} = 1$.

3. Examine the condition that the circle

$$x^2 + y^2 + 2gx + 2fy + c = 0$$

(1) touch, (2) cut off a given intercept $m$ on the axis of $x$.

Find the locus of the centre of a circle cutting off equal intercepts on the axes.

4. Investigate, by co-ordinate geometry, the locus of a point subtending equal angles at two given portions of the same right line.

## DIFFERENTIAL CALCULUS.

1. Show, from pure geometry, that

$$\frac{d}{dx}(\sin x) = \cos x; \quad \frac{d}{dx}(\text{square described on } x) = 2x.$$

2. Prove, without assuming the binomial theorem, that

$$\frac{d(x^n)}{dx} = nx^{n-1} \text{ for all values of } n.$$

3. Differentiate

$$\frac{(a-1)^{\frac{3}{2}}}{(c^2+1)^{\frac{1}{2}}} \; ; \; \log \tan\left(\frac{\pi}{4}+\frac{x}{2}\right) \; ; \; \frac{\sin\alpha(2 + a\cos x)}{(1 + a\cos x)^2} \; ; \; \log_e(c^x).$$

4. Differentiate

$$\log\sqrt{\frac{1+\sqrt{3}x+x^2}{1-\sqrt{3}x+x^2}} + \tan^{-1}\left(\frac{\sqrt{3}\,x}{1-x^2}\right).$$

## CONIC SECTIONS.

[The propositions to be proved geometrically.]

1. In any conic tangents at the extremities of any chord intersect on the diameter which bisects the chord.

2. The foot of the perpendicular let fall from the focus of an ellipse upon a tangent lies upon the auxiliary circle.

3. From the focus of a conic (S) a variable line S P is drawn to the curve, a tangent is drawn at P and a line S Q drawn to meet this tangent P Q at Q

Find the locus of Q

(1) When the angle S is a right angle.

(2) When it is any given angle.

## ENGINEERING SCHOLARSHIPS.—SECOND YEAR STUDENTS.

EXPERIMENTAL PHYSICS.—*Examiner*, Professor EVERETT.

1. By what method has the force of gravity at different parts of the earth's surface been compared ?

2. By what methods has the mean density of the earth been investigated ?

3. How is the sp. gr. of a solid determined by Nicholson's hydrometer ?

4. A hollow cylinder of glass with its axis vertical, having plane ends of the same thickness, is partly filled with mercury. What must be the depth of the mercury, that the centre of gravity of the whole may remain at the same distance from the top of the cylinder when the temperature rises, the expansion of mercury being $\dfrac{1}{5500}$ and the linear expansion of glass $\dfrac{1}{110000}$ ?

5. Describe the behaviour of coarse sand and lycopodium, when sprinkled on a vibrating horizontal plate, and account for the difference.

6. According to what laws does the note of a string rise

(1) when the string is shortened ;

(2) when its tension is increased ?

7. Describe Bohnenberger's electroscope.

8. What are the laws of induced currents, and what facts are quoted as illustrating the induction of a current upon itself ?

9. Describe the Camera Lucida.

10. The strength of the current given by a battery is observed when the electrodes are connected by a wire of resistance a.   When the

is lengthened till its resistance is $a + b$, the current losses half its strength. Find the resistance in the battery.

11. A hydrometer sinks to a given mark in pure water at the standard temperature, and sinks 3 inches lower in a liquid whose specific gravity is 8. Find, in inches of the stem, the volume immersed in the former case.

### CHEMISTRY.—*Examiner,* Dr. Andrews.

1. How would you calculate the volume of dry air at the temperature T and pressure $h$, in 100 volumes of moist air at the same temperature and pressure, the tension of aqueous vapour at T being $t$.

2. Describe the spectra of sodium, potassium, strontium and calcium; also of hydrogen gas. State also how you would observe the spectrum of the latter.

3. Give an account of the process of electrolysis, and state how it may be applied to the decomposition of the chlorides of hydrogen, potassium and magnesium.

4. How has the density of the vapour of sulphur been obtained at high temperatures, and what are the results of the experiment?

5. Calculate how many grains of nitric oxide would be obtained by the action of nitric acid upon 100 grains of metallic copper.

6. How is the fluoride of silicon prepared? State in symbols the reaction which takes place when it comes into contact with water.

7. Describe the chief ores of iron and the method of reducing them.

8. What are the blow pipe tests for copper manganese and cobalt?

9. How is the permanganate of potassium prepared and what applications has it received?

10. How would you analyse a magnesian limestone?

11. How would you determine the amount of phosphorus and sulphur in iron? In what respects do these bodies alter the properties of iron.

12. What is the composition of porcelain earth and how is it chiefly formed in nature?

13. How would you analyse a sample of gunpowder?

### GEOMETRICAL DRAWING.—*Examiner,* Professor James Thomson.

[NOTE.—The numbers annexed to the several questions are values assigned to them, indicating their relative importance for the examination.]

1. Explain how to solve the following three problems in Descriptive Geometry : you may do so without diagrams :—

To find the traces of the plane which contains three points given by their projections.

Given the projections of a finite straight line ; to find its length.

Given a point by its projections, and two straight lines by their projections ; to find the projections of the straight line which would pass through the given point and would meet each of the given straight lines. (5.)

2. Supposing a line, straight or curved, to be given by its projections on a vertical and a horizontal plane of projection ; show how to find its projection on any other vertical plane specified by its horizontal trace

being given. This plane is to be understood as brought into the plane of delineation by being turned round its own horizontal trace as a hinge. (4.)

3. Given the horizontal projection of a straight line and the angle which it makes with the horizontal plane of projection ; show how to find the angle which it makes with the vertical plane of projection. (3.)

4. Work out and explain one but not both of the following problems, marked (*a*) and (*b*) which are taught in the Engineer and Machinist's Drawing Book.    Credit will not be given for answering more than one of them :—

(*a*) To find the vertical projections of the line or lines of intersection of a ring and a cylinder. The ring is a surface of revolution with vertical axis, and its generating curve is a circle whose plane produced passes through the axis.    The cylinder is an ordinary circular cylinder, and is placed vertically.    Also show that the solution may be extended to the case of a ring whose generating curve is not necessarily a circle ; and to the case in which the vertical cylinder is not necessarily of circular base. (10.)

(*b*) To find the vertical and horizontal projections of the line or lines of intersection of a given sphere and a given cone which is a surface of revolution with vertical axis. (8.)

5. A sphere lying on the horizontal plane of projection casts its shadow partly on the horizontal plane of projection and partly on a given vertical cylindric surface. Show how to draw the horizontal and vertical projections of the line of separation of the illuminated and shaded parts of the sphere, and how to draw the outline of the shadow on the horizontal plane, and the vertical projection of the shadow margin on the cylinder.    The light is to be taken as falling in the direction usually assumed. (6.)

6. Given a cone by the projections of its vertex, together with the horizontal trace of its surface, and given the projections of a point which casts its shadow on the cone by light falling in a given direction ; show how to find the projections of the shadow.    To gain the full credit assigned to this question you should make your solution apply to cones in general, not necessarily solids of revolution, and it should apply to light falling in directions in general, not in one particular direction alone. (5.)

7. To find the traces of the plane which passes through a given line and a given point, in any case in which neither the traces of the given line, nor the traces of a line parallel to it passing through the given point, are accessible :—for instance, when the given line is nearly parallel to the " ground line," and when its traces, as also those of a line parallel to it through the given point, would be far beyond the limits of the available plane of delineation. (6.)

8. Explain the nature of isometric drawing, and show how to make an isometric drawing of a house, supposing its dimensions to be sufficiently given.    In this you should explain the distinction between the isometric and the natural scale. (4.)

9. Give the isometric projection of a cube, show how to find the length of an edge of the cube and how to find the angle which the edge makes with the plane of projection.    Also work out a numerical expression for the ratio of the length of a line to that of its isometrical projection. (3.)

10. Explain clearly any good method by which a perspective picture may be drawn when the original objects are given by horizontal and vertical projections of their points and lines (that is, in other words, by

plans and elevations), the picture surface being a vertical plane oblique to the vertical plane of projection. (6.) <span style="float:right">*Appendix,
No. 3.*
*Scholarship
Examina-
tions.*</span>

11. What is meant by the statement: 1st, that the perspective of an original straight line, indefinite as to length, is in the straight line, which passes through the vanishing point and the intersecting point of the original straight line : and 2nd, that it cannot extend in the direction from the intersecting point past the vanishing point, but that it may extend past the intersecting point from the vanishing point. (4.)

12. Explain how a sphere might be placed so that its perspective representation on a plane picture surface would a parabola in so far as it could be drawn. (3.)

13. Given the projections of a right circular cone (a solid of revolution) with its circular base in the horizontal plane of projection, and given the vertical projection of a curve drawn on its surface ; required the development of its surface with the curve shown on the development. (4.)

### THIRD YEAR STUDENTS.

#### NATURAL PHILOSOPHY.—*Examiner,* Professor Everett.

1. Distinguish between kinetic and potential energy, and state the law of the conversation of energy.

2. Prove the principle of the tangent galvanometer.

3. Give a formula for the velocity of sound in gases.

4. Define Young's modulus.

5. What is meant by the height of the homogeneous atmosphere, and how can it be expressed in terms of quantities observable at the earth's surface ?

6. Describe the construction of the astatic needle.

7. What is meant by a relay, in telegraphy ?

8. Compute the distance of the absolute zero of temperature below the zero of the centigrade scale.

9. Find the coefficient of friction, if a body occupies 9 seconds in sliding down an inclined plane of length 100 feet, the sine of the inclination being $\frac{5}{13}$.

10. Prove the principle of moments.

11. Investigate a formula for centrifugal force.

12. Supposing $g$ to be 32 when the foot and second are the units of space and time, what will it be when the mile and hour are units ?

13. Indicate by a sketch the positions of the images formed by the objective, the field glass and the eyepiece, in the use of compound microscope ; and find an expression for the magnifying power.

#### GEOLOGY AND PHYSICAL GEOGRAPHY.—*Examiner,* Professor Wyville Thomson.

1. Sketch the general distribution of the carboniferous rocks of Ireland, and name some fossils characteristic of the several members of this group.

2. Name the subdivisions of the lower silurian (or cambro-silurian) formation, and sketch their distribution in Great Britain and Ireland.

3. Give the various evidences of glacial action during the later geolo-
gical periods in the British area.

4. Describe and explain the principle of an artesian well.

5. Describe, so far as you are acquainted with them, the phenomena
of metamorphism.

6. Give a classification of the tertiary beds of the South of England,
and name two fossils characteristic of each.

7. What mammalian genera are found in the lower (eocene) tertiaries
of Europe?

8. What are the causes which mainly influence the amount of rain-
fall in the British Islands.

SURVEYING, LEVELLING, MENSURATION, &c.—*Examiner*, Professor James
Thomson.

[NOTE.—The numbers annexed to the several questions are values assigned to them,
indicating their relative importance for the examination.]

1. What is parallax in a theodolite? Also state and clearly explain
whether or not a theodolite, fully adjusted for an observation by a per-
son of long sight, will require an adjustment for parallax ;—*firstly*, in
case of its being used for the same observation by a short-sighted person ;
and *secondly*, in case of its being used by the short-sighted person for a
different observation. State what is the precise condition of all things
concerned which is to be brought about by the carrying into effect of the
adjustment for parallax.  (6.)

2. Describe the area of the entire plot of land shown surveyed in the
leaf of a field book submitted to you, and work out one or more good
checks applicable to the principal parts of field work, and of your calcu-
lation. Tables for use in this computation will be supplied to you.  (12.)

3. In surveying with the chain, without a theodolite, which check on
the measurements of the sides of a triangle would you usually make by
a split line or a tie line ; and how could you, by calculations, make the
requisite determination of accuracy or inaccuracy of the measurements
of the triangle—1st, when the testing line measured passes through an
angle of the triangle ; and, 2nd, when it does not?  (5.)

4. How may the ranging and chaining of a straight line, interrupted
both as to seeing and walking along it by an obstruction, be conducted
in each of the two following cases, the ground in both cases being open
and accessible past the obstruction, on one side at least :—First : when
the station at the commencement and the direction of the line from that
forward to the obstruction are given ; and, second, when the stations at
both extremities are given, but there is no point in the line between
them from which they can both be seen?  (5.)

5. A sphere lying on the horizontal plane of projection casts its shadow
partly on the horizontal plane of projection and partly on a given vertical
cylindric surface. Show how to draw the horizontal and vertical
projections of the line of separation of the illuminated and shaded parts
of the sphere ; and how to draw the outline of this shadow on the horizon-
tal plane ; and the vertical projection of the shadow margin on the cylin-
der. The light is to be taken as falling in the direction usually assumed.
(4.)

6. In ranging a curve by the "method of angles at the circumference"
(Professor Rankine's method) with some points of the curve determined
on the ground by means of a transverse, if you have ranged and pegged

a portion of the curve with the theodolite at one station, and it becomes necessary to move the theodolite to another station on the curve; how do you arrange the theodolite at the new station to give the proper readings for the additional pegs which may be ranged by sights taken from that new station?  In answering this you should take into consideration that the commencement of the curve, as also the end of the curve, may or may not be visible from the new theodolite station.  (6.)

7. In setting up a transit theodolite, how can you adjust the vertical axis truly vertical?  Then having effected this temporary adjustment, how can you test whether or not the horizontal axis is truly horizontal; how can you adjust it to be so if not so already?  Also, how can you test whether or not the line of collimation is perpendicular to the horizontal axis, and how can you adjust it if adjustment be found necessary?  (4.)

8. Explain how to set out the *half-breadths* for a railway cutting in sideling ground.  (4.)

9. Explain and prove the two formulae of Bidder's Table of Earthwork, viz. :—

$$\text{First content} = \frac{22}{27}\left\{(a+b)^2 - ab\right\}$$

$$\text{Second content} = \frac{11}{9}(a+b)\dots\dots(4.)$$

10. Mention and explain the chief methods you know for computing the quantity of earthwork in an entire cutting or embankment on a railway, stating at the same time what are the measurements made in the field, and the data generally, that are requisite for the calculations you contemplate.  Also state and explain as clearly as you can, the relative merits of the various methods.  (6.)

11. In a Y level or a Y theodolite what are the essential conditions to be brought about as adjustments among the following, viz.—

    a. The longitudinal bubble tube?
    b. The line of collimation?
    c. The cylindric rings which rest in the Ys?

Also what is the condition to be brought about among the various parts of a Gravatt's level in order that it may give level sights when the longitudinal bubble tube is levelled?  Also what is the reason why the line of collimation in the Gravatt's level ought to be perpendicular to the vertical axis; and how would the use of that instrument for levelling be affected by a slight imperfection of that adjustment?  Brief and clear answers to the various parts of this question, without any intricate demonstration will suffice.  (6.)

## MEDICAL SCHOLARSHIPS.—SECOND YEAR STUDENTS.

### * ANATOMY AND PHYSIOLOGY.—*Examiner,* Dr. Redfern.

1. Name the specimens numbered 1 to 10, and describe the characters of the markings on which your opinion is founded.

2. Describe the arrangements by which the head of the humerus is retained in its position during the movements at the shoulder joint.

3. Name the external rotator muscles of the thigh at the hip joint, and mention the direction of the fibres of each muscle with its name.

4. State the shape and extent of the small sac of the peritoneum, and

describe its relations to the other parts of that membrane in the neighbourhood of the liver, spleen, and great omentum.

5. Describe the parts which would be seen with a low power of the microscope on a transverse section through the whole coats of a duodenum with its vessels injected.

### BOTANY.—*Examiner, Professor Wyville Thomson.*

1. State your views with reference to the condition and relations of the contents of a living vegetable cell.

2. Describe the phenomena of conjugation as it occurs in one of the filamentous algæ such as zygnema.

3. Give examples illustrating the principal modifications of the flower in the labiatæ.

4. Give any instances of ciliary action in the vegetable kingdom.

5. Describe the structure and mode of development of the style and stigma in (a) an apocarpous, and (b) a syncarpous gynœcium.

6. Describe the flower of the oat or any other grass.

7. Give the characters of the solanaceæ. Name, and mention the properties of, any medical or economic plants belonging to the order.

### ZOOLOGY.

1. Describe generally the skeleton of any one of the chelonia. In what does it essentially differ from that of an armadillo.

2. What is the notochord? when, where, and how is it developed? In what vertebrata is the notocord said to be persistent?

3. Name and refer to their several classes and orders the animal parasites which infest the human race.

4. Describe the condition of the various elements of the shoulder-girdle in an ordinary bony fish.

5. Describe the upper jaw and its connexions in the hare, the turkey, the turtle, the viper, and the cod.

6. Describe the structure and position of the gills in bivalves.

### CHEMISTRY.—*Examiner, Dr. Andrews.*

1. How would you calculate the volume of dry air at the temperature T and pressure h, in 100 volumes of moist air at the same temperature and pressure, the tension of aqueous vapour at T being t.

2. Describe the spectra of sodium, potassium, strontium and calcium; also of hydrogen gas. State also how you would observe the spectrum of the latter.

3. Give an account of the process of electrolysis, and state how it may be applied to the decomposition of the chlorides of hydrogen, potassium, and magnesium.

4. How has the density of the vapour of sulphur been obtained at high temperatures, and what are the results of the experiment?

5. Calculate how many grains of nitric oxide would be obtained by the action of nitric acid upon 100 grains of metallic copper?

6. How is the fluoride of silican prepared? State in symbols the reaction which takes place when it comes into contact with water.

7. Describe the chief ores of iron and the method of reducing them?

8. What are the blow pipe tests for copper, manganese, and cobalt?

9. How is the permanganate of potassium prepared, and what applications has it received?

10. Describe the compounds of chlorine and mercury, their preparation and tests.

11. How is dextrin prepared, and how is it distinguished from starch?

12. Give an account of the process of etherification?

13. What is the proximate composition of the fatty bodies?

14. What are the chief constituents of urine?

15. Give some account of hematosine?

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### THIRD YEAR STUDENTS.

#### PRACTICAL CHEMISTRY.—*Examiner*, Dr. Andrews.

1. What are the tests for tin and antimony?

2. How would you analyse an alloy of copper and zinc?

3. How would you determine the respective amounts of sulphuretted hydrogen, and of sulphide of potassium, when present in a mineral water?

4. How is creatinine prepared (*a*) from creatine and (*b*) from urine?

5. Nitrate of silver produces a precipitate which may be a chloride, bromide, iodide, cyanide, or oxalate—how would you examine it?

6. How is hematosine prepared, and what are its characteristic properties?

7. What reaction takes place when glucose precipitates the suboxide of copper?

8. Give an account of the tests of morphia, strychnia, and brucia?

[Candidates were also required to perform qualitative analyses.]

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#### ANATOMY AND PHYSIOLOGY.—*Examiner*, Dr. Redfern.

1. Name the specimens numbered 1 to 12. State to which side of the body each belongs, and describe the characters of the markings on which your opinion is founded.

2. State the characters and connections of each of the coverings of the testis, and mention with each the vessels and nerves which supply it.

3. Describe the arrangements of the parts which require dissection at the roots of the lungs, in a thorax freshly opened, with the method of their exposure in regular order.

4. How do you distinguish the temporary from the permanent teeth? Describe the characteristics of the first lower bicuspid tooth, and those of the first and third permanent molars in both jaws.

5. What changes take place in the velocity of the blood stream as it flows onwards from the heart in the general circulation? How are these changes ascertained to exist, and by what causes are they produced?

## FOURTH YEAR STUDENTS.

### ANATOMY.—*Examiner, Dr. Refern.*

1. Name the specimens numbered 1 to 12. State to which side of the body each belongs, and describe the characters of the markings on which your opinion is founded.

2. Describe the articular arrangements and the movements by which the foot is adapted to irregularities of the ground in walking, and mention the structures on which the greatest strain is made by the weight of the body.

3. Mention the muscles of the upper limb below the elbow joint, and state what nerve supplies each muscle.

4. Describe the general course of the lymphatic vessels of the walls and viscera of the abdomen, with the position and numbers of the glands with which they are connected.

5. Describe the minute structure of the cornea proper, together with that of the membranes covering it in the front and behind, and the arrangement of its vessels and nerves.

### PHYSIOLOGY.

1. What is the quantity and kind of food required daily by a healthy adult man? Of what constituents must it consist? Does it matter in what form these are taken in? What is the destination of the several constituents of the food, and what are their uses in the economy?

2. What varieties are there in the acuteness of the sense of touch in different parts of the body? How are these differences estimated? What circumstances will diminish, and what increase the sensibility to touch?

3. Mention the function of each of the cranial nerves in succession, and that of their branches.

4. Trace the course through which motor and sensory impulses travel along the spinal cord, and the experiments in proof.

5. What is the period of duration of menstrual life? Describe the phenomena of menstruation, its duration, the character and quantity of the secretion, with the attendant changes in the organs of generation; also the period and method of establishment and of discontinuance of this function.

### SURGICAL ANATOMY.—*Examiner, Dr. Gordon.*

1. Describe the course and coverings of the various forms of Inguinal Hernia.

2. Describe the relations of the Thyroid body, and give a very brief description of its diseases and their treatment.

3. Describe the operation of ligaturing the right subclavian artery in the third part of its course, mentioning the structures divided as you proceed.

### THEORY AND PRACTICE OF MEDICINE.—*Examiner, Dr. Cuming.*

1. Enumerate the morbid conditions in which increased resonance is found in the chest.

2. Give the pathology and treatment of diabetes incipidus.

3. What lesions may produce the apoplectic condition?

4. Give the differential diagnosis of aortic pulsation and abdominal aneurism.

5. Give an account of the symptoms and treatment of lead palsy.

6. Under what circumstances ought thoracentesis to be performed?

### MIDWIFERY, AND DISEASES OF WOMEN AND CHILDREN.

*Examiner, Dr. R. F. Dill.*

1. What are the axes, planes, and different measurements of an ordinary sized adult female pelvis?

2. Under what circumstances is it necessary to *turn?* What are the dangers, and how is this operation performed?

3. What is understood by placental souffle? Where are the sounds of the fœtal heart, and the placental souffle generally heard? State the value of each sound as a sign of pregnancy?

4. Mention the causes of delay in each stage of labour, and the circumstances in which ergot of rye should be administered in a case of labour.

5. Describe the circumstances in which the accoucheur may be called upon to use the catheter, and the manner of performing catheterism on a female patient.

6. Mention the structures, in their order, which must be divided in performing the operation "Cæsarian Section."

7. Give the derivations of, and explain what is understood by the terms "*Dystochia*," "*Oxytocus*," when used in obstetric science. Mention the causes which induce the former, and give the names of such as are included in the latter.

8. What is the management of a new-born child in a state of suspended animation? Give Marshall Hall's plan, with reasons for its adoption.

9. What is the class of patients the physician is generally called upon to treat for purulent ophthalmia? State concisely the stages, symptoms, and treatment, and the dangers which may result from neglect.

10. Write an unabbreviated prescription, in Latin, with directions for its use, for a carminative mixture for a child, adding as much laudanum as may be administered with safety to an infant of one year old.

### MEDICAL JURISPRUDENCE.

*Examiner, Professor Hodges, L.P.P.S., L.A.H., F.C.S.*

1. Describe the treatment required in poisoning by Cantharides?

2. State the smallest doses in which the following poisons have proved fatal:—Opium, Prussic Acid, Corrosive Sublimate, Oil of Savin.

3. How are stains supposed to be produced by Nitric Acid to be examined?

4. What are the methods required for the identification of Oxalic Acid?

5. What are the symptoms of poisoning by Nux Vomica?

6. What is the treatment required in poisoning by Strychnine?

## Law Scholarships.—First Year Students.

### Real Property.—*Examiner, Professor Molyneux.*

1. In what instances can land now escheat to a subject?
2. On failure of lineal descendants of a purchaser, who is the next legal heir?
3. What is the ordinary, and what the extraordinary course toward the assertion of title to real estate under a will?
4. At what period of our history was the legal power of alienation by a lessor rendered complete?
5. In what instances do courts of law and equity agree in the construction of instruments conveying estates in land, and in what cases do they differ?
6. In what respect has the law of dower been altered by the 3 & 4 Wm. IV., ch. 105?
7. What are the necessary conditions under which legal estates can be created by the exercise of powers?
8. What rule of equity secures the rights of mortgagors, even against their own stipulations to the contrary?

### Jurisprudence.—*Examiner, Professor Leslie.*

1. Explain the manner in which the growth of towns led to changes in the laws and customs of the country.
2. What is meant by a legal *right*?
3. What are the ideas involved in the term Positive Law?
4. What is the meaning of the term *unconstitutional*, as applied to acts of the Supreme Government?
5. What are the causes of uncertainty in the law, according to Lord Bacon?
6. What is the connexion between Jurisprudence and the utilitarian theory of morals, according to Austin?
7. What is the distinction drawn by Austin between Jurisprudence and the science of legislation?
8. What is the relation between Public and Private Law, according to Lord Bacon, and what is meant by each?
9. What changes has the law undergone since the Conquest, in respect to the descent of land?
10. How did trial by jury in its original form differ from the modern trial by jury?

### Second Year Students.

#### English Law.—*Examiner, Professor Molyneux.*

##### Common Law.

1. In what cases are written contracts void for ambiguity?
2. What are the modes by which rights acquired by breach of contract can be extinguished?
3. What are the requisites of an acknowledgment to take a case out of the statute of limitations?

4. What caution is to be observed in contracting with public companies?

5. In what case will a contract of sale of goods be void although it is made expressly "*subject to all faults*"?

6. State some instances where a contractor is liable for loss although he was not to derive any benefit from the contract.

7. What is the consideration moving from the drawer to the acceptor of an accommodation bill of exchange?

8. What is the consideration to sustain an action to recover money paid to defendant's use?

## CIVIL LAW AND JURISPRUDENCE.—*Examiner*, Professor Leslie.

1. What was the connexion between the medieval law of primogeniture and Roman Law?

2. State the objects of *usucapio* in the Roman Law.

3. Give a summary statement of Savigny's theory of *possession*.

4. Give examples of distinctions made by ancient law, which mature jurisprudence rejects.

5. Give examples of distinctions made by mature jurisprudence, which do not appear in ancient law.

6. Compare and contrast Roman and English equity.

7. Criticise Blackstone's divisions of rights into rights of persons and rights of things.

8. Point out the chief differences between Roman and English law in respect to the descent of landed property, in the absence of a will.

9. Trace the changes which the law of Rome underwent in respect to the position of women; and explain the manner in which principles of both the earliest and the latest Roman law found their way into English law on the subject.

10. Give a brief historical account of Roman law in its relation to English law.

11. How can law best promote the increase of wealth, according to Bentham?

## THIRD YEAR STUDENTS.

### ENGLISH LAW.—*Examiner*, Professor Molyneux.

#### EQUITY.

1. What is the difference between an equitable mortgage and a mortgage of an equity?

2. What is the popular error as to the meaning of the word "*equity*" as known to our law?

3. In what limited meaning is the word "*concurrent*" to be understood as applicable to courts of law and equity?

4. In what cases of express fraud will courts of equity deny relief?

5. State some of the classes of cases of "*accident*" in which equity will not relieve?

6. What are the conditions under which alone courts of equity will grant relief in the case of lost, destroyed, or suppressed instruments?

7. In what instances of "*suppressio veri*" will courts of equity deny relief?

8. What additional facts, besides mere weakness of mind, are necessary to invalidate instruments in equity executed by persons so circumstanced ?

CIVIL LAW AND JURISPRUDENCE.—*Examiner*, Professor Leslie.

1. Explain the phrase *conditio indebiti.*

2. (1) What was the requisite to acquire title by prescription in Roman law ? (2.) How do you account for the length of the period requisite in English law ?

3. Explain the difference between *agnatic* and *cognatic* relationship.

4. State the different kinds of contract in Roman law, and give examples.

5. Explain the phrase *cessio bonorum.*

6. What are the analogies, according to Mr. Maine, between early municipal law and modern international law ?

7. The proportion of civil to criminal law is very different in early and advanced society respectively.   Why ?

8. Explain *res mancipi* and *res nec mancipi,* and trace the causes of their assimilation.

9. Explain the Roman maxim, *omnes homines naturâ æquales sunt.*

10. What is the connexion between the *jus gentium* of the Romans and modern International Law ?

## SENIOR SCHOLARSHIPS.

### MODERN LANGUAGE.—*Examiner*, Professor Meissner.

FRENCH.

I. Translate into French :

Whoever has attended but a little to the phenomena of human nature has discovered how inadequate is the clearest insight which he can hope to attain into character and disposition.   Every one is a perplexity to himself and a perplexity to his neighbours ; and men who are born in the same generation, who are exposed to the same influences, trained by the same teachers, and live from childhood to age in constant and familiar intercourse, are often little more than shadows to each other, intelligible in superficial form and outline, but divided inwardly by impalpable and mysterious barriers.   And if from those whom we daily meet, whose features are before our eyes, and whose minds we can probe with questions, we are nevertheless thus separated, how are the difficulties of the understanding increased when we are looking back from another age, with no better assistance than books, upon men who played their parts upon the earth under other outward circumstances, with other beliefs, other habits, other modes of thought, other principles of judgment ?—J. A. FROUDE.

II. *Philological Questions :*

1. What Latin adjectives in *us, a, um,* become in French adjectives of one termination ?

2. Give an account of the origin of the conjunctive and disjunctive demonstrative pronouns.

3. Mention those Latin suffixes of substantives, which have become sterile in French, those which are the most productive in the formation of modern words, and those which are of purely French origin.

4. What Latin parts of speech serve in Modern French as prepositions?

5. State the various opinions respecting the etymology of the auxiliary verb *être*, with the reasons adduced in support of them.

III. Write an account, in French, of Victor Hugo.

## GERMAN.

Translate into German:

I. I have been trying, hitherto with no success, to form a society, the object of which should be to collect information as to every point in the condition of the poor throughout the kingdom, and to call public attention to it by every possible means, whether by the press or by yearly or quarterly meetings. And as I am most anxious to secure the co-operation of good men of all parties, it seems to me a necessary condition that the society should broach no theories, and propose no remedies; that it should simply collect information, and rouse the attention of the country to the infinite importance of the subject. I know full well that wisdom in the higher sense, and practical knowledge, are rarely found in the same man; and, if any theory be started, which contains something not suited to practice, all the so-called practical men cry out against the folly of all theories, and conclude themselves, as if the vulgar to the conclusion, that because one particular remedy has been prescribed ignorantly, no remedy is needed, or at least, none is practicable.—THOMAS ARNOLD.

Translate into English:

II.—Wir Knaben hatten eine sonntägliche Zusammenkunft, wo jeder von ihm selbst verfertigte Werke produciren sollte. Und hier begegnete mir etwas wunderbares, das mich sehr lang in Unruh setzte. Meine Gedichte, wie sie auch seyn mochten, musste ich immer für die besten halten. Allein ich bemerkte bald, daß meine Mitbewerber, welche sehr lahme Dinge vorbrachten, in dem gleichen Falle waren und sich nicht weniger hinführten; ja was mir noch bedenklicher schien, ein guter, obgleich zu dergleichen Arbeiten völlig unfähiger Knabe, dem ich übrigens gewogen war, der aber seine Reime sich vom Hofmeister machen ließ, stellt diese nicht allein für die allerbesten, sondern war völlig überzeugt, er habe sie selbst gemacht; wie er mir, mit dem vertrauteren Verhältniß, worin ich mit ihm stand, jederzeit aufrichtig betheuerte. Da ich nun solchen Irrthum und Wahnsinn offenbar vor mir sah, fiel es mir eines Tages nahe gar, ob ich mich vielleicht selbst in dem Falle besinne, ob nicht jene Gedichte wirklich besser seyen als die meinigen, und ob sich mir nicht gleich jenen Knaben eben so toll als den übrigen erscheinen müssen.—GOETHE.

III.—Glück, um dewußten ein glücklichen Hand,
Das die blumenumwundene Krone
Aufstellt mit immer frcundlicher Helle,
Und mir könnten es fröhlich genießen—
Aber es läßt nicht freuen um schlingen,
Und des Mörd ringt umwunden Stelle
Sie verräth und den fühnen Verherrn,
Der die Käste vertrogen durchstreut:
Einen Segen haben uns zu bewahren,
Das der Schwert um das Fremdlings zeigt.

Elternn find mit in den eigenen Etzen,
Das Band kann seine Kinder nicht zerschlagen.
Nicht wo die goldene Ceres Lacht
Und der friedliche Pan, der Flurenbeschüzer,
Wo die Essen rauschen in der Berge Schooß,
Da entsprungen der Erde Geschecter.—SCHILLER.

IV. Give an account in German of the childhood of Goethe.

## ITALIAN.

I. Translate into Italian:

I cannot but applaud the fondness and pride with which I have noticed English gentlemen, of generous temperaments, and high aristocratic feelings, contemplating those magnificent trees, which rise, like towers and pyramids, from the midst of their paternal lands. There is an affinity between all great natures, animate and inanimate. The oak, in the pride and lustihood of its growth, seems to me to take its range with the lion and the eagle, and to assimilate, in the grandeur of its attributes, to heroic and intellectual man. With its mighty pillar rising straight and direct towards heaven, it is an emblem of what a true nobleman should be: a refuge for the weak, a shelter for the oppressed, a defence for the defenceless. He who is this, is an ornament and a blessing to his native land. He who is otherwise, abuses his eminent advantages, abuses the grandeur and prosperity which he has drawn from the bosom of his country.—WASHINGTON IRVING.

II. Translate into English:

Una delle più grandi consolazioni di questa vita è l'amicizia, e una delle consolazioni dell'amicizia è quell'avere a cui confidare un segreto. Oragli amici non son diviate per coppie come i coniugi; ognuno, generalmente parlando, ne ha più d'uno: il che forma una catena, di cui nessuno potrebbe trovare il capo. Quando adunque un amico si procura quella consolazione di deporre un segreto nel seno d'un altro, dà a costui la voglia di procurarsi la stessa consolazione alla sua volta. La prega, è vero, di non dir nulla a nessuno; e una tal condizione, chi la prendesse nel senso rigoroso delle parole, troncherebbe, immediatamente il corso delle consolazioni. Ma la pratica generale ha voluto ch'ella obblighi soltanto a non confidare il segreto che ad un amico egualmente fidato, e imponendogli la condizione medesima. Così d'amico fidato in amico fidato il segreto gira e gira per quella immensa catena, tanto che giunge all'orecchio di colui o di coloro a cui il primo che ha parlato intendeva appunto di non lasciarlo giunger mai. E avrebbe per ordinariamente a stare un gran pezzo in via, se ognuno non avesse che due amici, quello che gli dice e quello a cui ridice la cosa da tacersi. Ma v'ha degli uomini privilegiati che il contano a centinaia; e quando il segreto è venuto ad uno di questi uomini, i giri divengon si rapidi e si moltiplici, che non è più possibile di tener nota.—MANZONI.

III.

Dolce e chiara è la notte e senza vento,
E queta sovra i tetti e in mezzo agli orti
Posa la luna, e di lontan rivela
Serena ogni montagna.   O donna mia,
Già tace ogni sentiero, e pei baloni
Rara traluce la notturna lampa:

*of Queen's College, Belfast.* 119

Appendix,
No. 5.
Scholarship
Examina-
tions.

Tu dormi, chè t' acoolse agevol sonno
Nelle tue chete stanze ; e non ti morde
Cura nessuna ; e già non sai nè pensi
Quanta piaga m' apristi in mezzo al petto.
Tu dormi : io questo ciel, che si benigno
Appare in vista, a salutar m' affaccio,
E l' antica natura onnipossente,
Che mi fece all' affanno.   A te la speme
Nego, mi disse, anche la speme : e d' altro
Non brillin gli occhi tuoi se non di pianto.
Questo dì fu solenne : or de' trastulli
Prendi riposo ; e forse ti rimembra
In sogno a quanti oggi piacesti, e quanti
Piacquero a te : non io, non già ch' io speri,
Al pensier ti ricorno.—LEOPARDI.

## HISTORY.—*Examiner,* Professor YONGE.

### QUESTIONS.

1. Sketch the character of Queen Elizabeth as displayed in her foreign policy ; especially with regard to France and Spain.

2. Enumerate the Prime Ministers of the 18th century, describing the general terms of their policy.

3. Mention the principal objects and provisions of the peace of Utrecht, and of the peace of Versailles ; and discuss how far they were commendable, defensible, or objectionable.

4. What were the leading events in Irish History during the ministry of Lord North ?

5. What were the real and the professed objects of "the League" in France ?

6. Give a brief sketch of the war between France and England in the middle of the reign of George II.

7. Give a brief sketch of any three of the following statesmen : Richelieu, Mazarin, de Retz, Colbert, Louvois, Fleury, Turgot, and Necker.

8. Enumerate the acquisitions of territory made by France since the accession of Louis XIV.

### SUBJECT OF ESSAY.

THE INFLUENCE OF THE CRUSADES ON THEIR OWN AND SUBSEQUENT AGES, AND ON DIFFERENT COUNTRIES.

## NATURAL PHILOSOPHY.—*Examiner,* Professor EVERETT.

1. Investigate the attraction of an infinite uniform plane lamina upon an external point.

2. Investigate the law of central force for a body moving in an equiangular spiral.

3. If there are two centres of force, one attractive and the other repulsive, the force varying *inversely as the distance,* prove that the lines of force are circular arcs.

4. Find the velocity of translation acquired by a uniform cylinder of

radius $r$ in rolling without slipping down an inclined plane of length $l$ and inclination $i$.

5. The bounding surface of two media is spherical; investigate a formula for the positions of the conjugate foci of rays passing normally from one medium into the other.

6. What law of capillary attraction can be inferred from the observed fact that the surface of the liquid elevated between two plane plates which meet at a small angle is a rectangular hyperbola?

7. Indicate the position of the nodes and loops of pipes stopped at one end, for the fundamental tone and the overtones; and thence the relation of the latter tones to the former as regards number of vibrations.

8. Describe an accurate method of determining the absolute expansion of mercury by heat; and shew how the apparent expansion of mercury in glass may be computed from an experiment with the weight thermometer.

9. The cells of a battery are all alike, and are arranged in equal groups in such a way that the resistance in the battery is equal to that in the connecting wire. Prove, by Ohm's law, that the current is stronger than it would be with any other arrangement of the cells.

10. Show how the wave length of light of any particular colour can be computed from observation of the diffraction spectrum obtained by looking at a brilliant point of light through a fine grating, in which the openings are at equal known distances.

## CHEMISTRY.—*Examiner,* Dr. *Andrews.*

1. Explain the meaning of the terms, univalent, bivalent, trivalent, &c., and illustrate by examples the statement that multivalent elements sometimes exhibit different degrees of equivalency.

2. What is the composition of the theoretical univalent radicle hydroxyle, and what are its relations to a certain group of elements?

3. Give an account of the three ways in which chlorine and bromine act on organic bodies.

4. Write the formulas and describe the preparations and properties of the ferrocyanide, ferricyanide, and sulphocyanide of potassium.

5. Describe Gay Lussac's and also Dumas' methods of determining the density of a vapour?

6. How would you determine the amount of the gases dissolved in a spring water, and analyse the mixture?

7. Give an account of the more important compounds of chromium.

8. How would you analyse mispickel—a compound of sulphur, arsenic, and iron?

[*Candidates were also required to perform qualitative analyses.*]

## NATURAL HISTORY.—*Examiner,* Professor Wyville Thomson.

### BOTANY.

1. Describe the structure of the female cone in the abietineæ, and mention the different views which have been held with reference to the homologies of its parts.

2. Give the characters of the Solanaceæ, and state the properties of any medicinal or economic plants belonging to the order.

3. Describe the reproductive organs and the mode of development of the Lycopodiaceæ.

4. Explain the characteristic form of a palm-stem, noting its mode of *Appendix, No. 8.* growth and the arrangement of its vascular bundles.

5. Describe the structure of the fruits of the yew and juniper.

6. What is æstivation? Give examples of some of the more marked *Scholarship Examina-* forms of æstivation, taken from plants in whose discrimination æstivation *tions.* furnishes a good character.

7. What is the position of the placenta in papaver, iris, lathyrus, ranunculus, raphanus, and viola respectively?

## ZOOLOGY.

1. Describe as to form, structure, and position, the swimming bladder of fishes. State the modifications of this organ which furnish good characters in the classification of fishes. How do anatomists interpret its homologies?

2. Describe the structure and mode of growth of a hair and of a feather.

3. Describe the development of a frog; and mention the permanent representatives among the amphibia of its different phases.

4. Give the dental formula of the rhinoceros.

5. What is the nature of the medusoid of a campanularian hydroid? And what of the pseudembryo of a star-fish?

6. Describe, and contrast in structure and in position, the paired appendages of the spider, the beetle, the crab, and the centipede.

7. Describe the structure, the mode of growth, the reproduction, and the metamorphoses during development of a compound ascidian.